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DOMESTIC ENGINEERING

PLUMBING & HEATING CONTRACTING AND MERCHANDISING

etroit Dealer
ells Many Items
Newly Opened
Show Room

AUTOMATIC HEAT
PAGE 91

SEPTEMBER
1932

DOMESTIC ENGINEERING

NEW!

A shower head that turns every name on your books into an active prospect . . .

If you had a plumbing specialty to sell which performs a basic service so effectively that it makes every similar article obsolete . . . which is so low in cost that anyone can afford it . . . which is so small that you can drop it into your pocket to demonstrate whenever you go on a job . . . could you sell it?

Then you can sell this new Crane *Refreshor* shower head! Despite its small size, its grooves produce two complete circles of individual, non-intersecting streams which give the same spread at 6 feet with 3½ gallons per minute that ordinary showers give at 6 feet with 5 to 7 gallons.

Crane REFRESHOR *Shower Head, made in nickel and chromium plated finishes, in hexagon screwed inlet and integral ball joint inlet styles.*

It never clogs because it has no small perforations to stop up. To clean it turn the thumb-lugs, opening the head, and flush out pipe scale and foreign matter. Go over the features this *Refreshor* shower head gives you to sell: smaller, better-looking, cheaper, more efficient, more economical of water, never gets out-of-order, can be cleaned without tools. It's a "natural," isn't it?

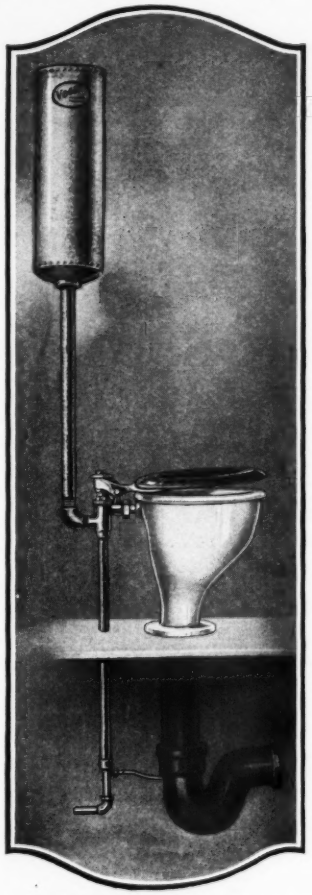
The time to see this shower head is now while you can still be the first to introduce it into your territory.

• • •

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVE.,
CHICAGO, ILLINOIS
NEW YORK: 23 W. 44TH STREET

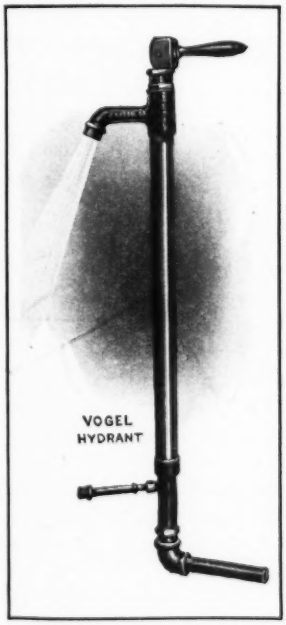
Branches and Sales Offices in One Hundred and Sixty Cities

CRANE



NUMBER ONE VOGEL FROST-PROOF CLOSET

Simple in operation. Sturdy in construction. Half a million in operation.



VOGEL FROST-PROOF HYDRANT

PLUMBERS WHO USE OUR FOLDERS AND BLOTTERS ARE GETTING PLENTY OF BUSINESS INSTALLING VOGEL FROST-PROOF CLOSETS AND HYDRANTS • • •

ARE YOU GETTING YOUR SHARE

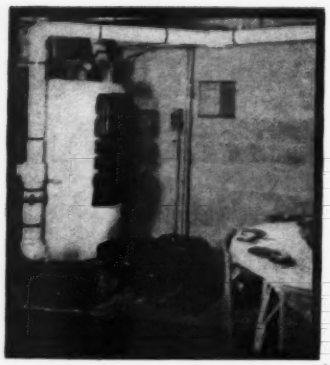
THE response is almost immediate when plumbers send out folders and blotters to let their customers know the advantage and convenience of Vogel Frost-Proof Closets and Hydrants. Orders come in because people realize the advantage of an extra closet outside that will never freeze, and a hydrant that assures a supply of water outside all year 'round.

Plumbers made a double profit on these jobs—one on the sale and one on the installation. So if you haven't written in for a supply of folders and blotters imprinted with your name and address, you are overlooking an almost sure bet for new business and extra profits.

JOSEPH A. VOGEL CO.
Wilmington, Delaware
St. Louis, Missouri

VOGEL PATENTED

Frost-Proof Products



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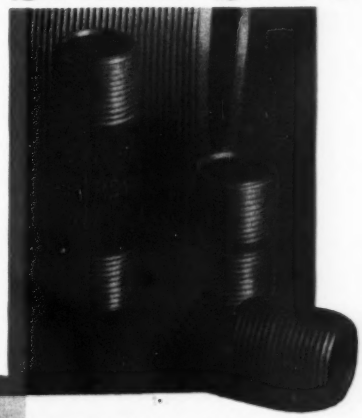
Byers Wrought Iron Pipe Threads Better...

—IDENTIFIED BY THE SPIRAL STRIPE



The material from which pipe is made has a great deal to do with its quality, but fine material does not necessarily assure fine pipe unless equally high standards of practice apply in both operations.

The quality of the pipe has much to do with producing good threads, but pipe of the highest quality cannot be made up into tight joints if poor tools or inexperienced workmanship are employed.

A. M. Byers Company operates the largest and most modern wrought iron mill in the country. The wrought iron produced is uniform in chemical and physical properties. It is as free from hard spots, laminations and blisters as scientific control and minute inspection can make it. The Byers pipe mills operate on an equally high plane and every length of pipe is individually tested and inspected before it is rolled with the red Spiral Stripe which is an instant mark of identification. The red Spiral Stripe and the name "Byers" rolled in the metal are your assurance of the finest threading-quality wrought iron ever produced.

Write our Engineering Service Department today for any information you desire on threading or welding. Also ask for your copy of "Pipe Threading" Bulletin 52 and "Pipe Bending", Bulletin 50—complete information on the only genuine wrought iron pipe made especially for bending. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

WELDS BETTER, TOO

Byers Genuine Wrought Iron Pipe also welds perfectly with either gas or electric arc. The reason for this superior weldability is the included iron silicate—a natural flux. Hence, strength in the weld zone is equal to that of the body metal.

YOU'LL like Byers Jobbers—good stocks, quick deliveries, dependable service.

Make Piping Jobs Complete with Byers Wrought Iron NIPPLES...

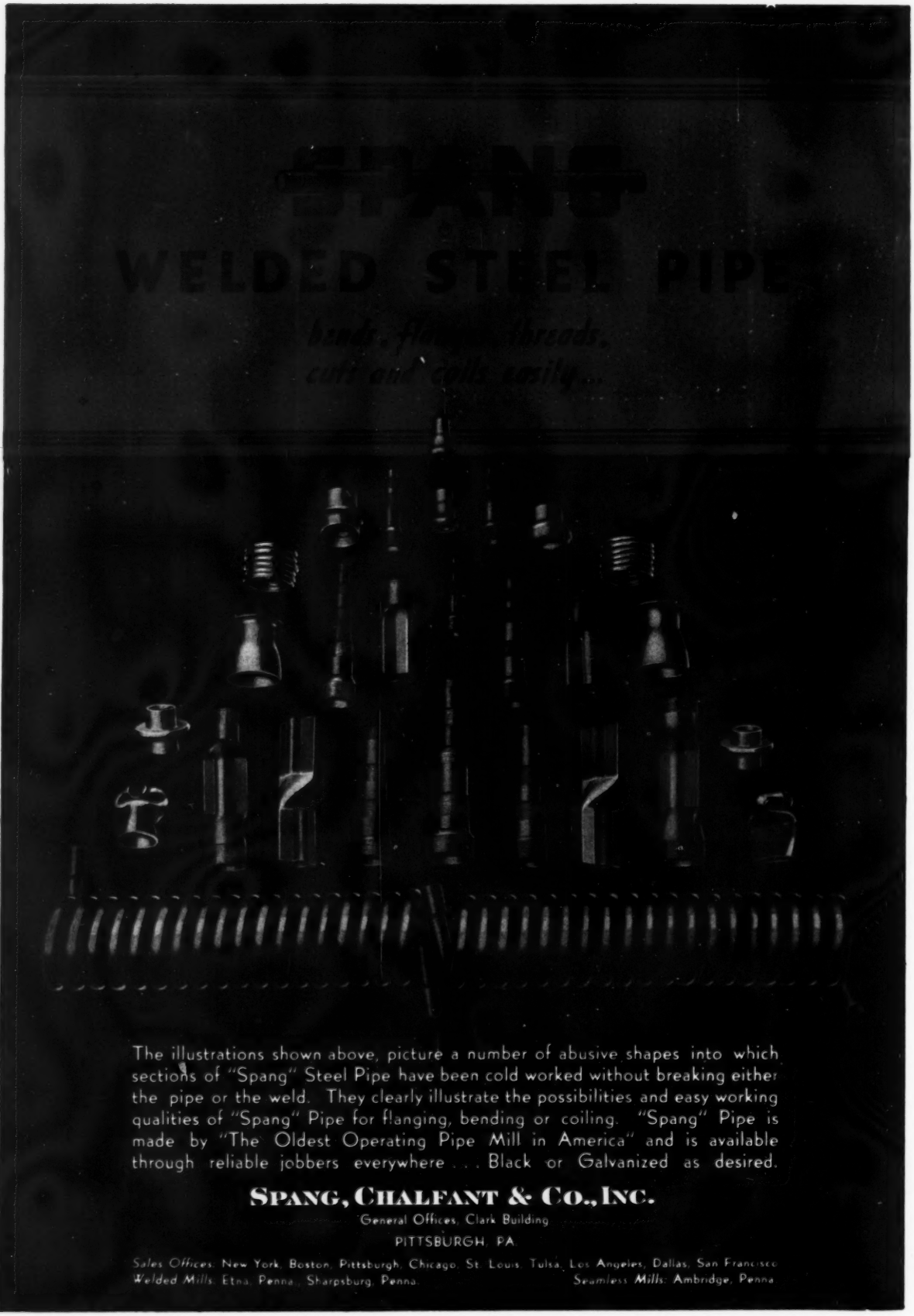
When corrosion conditions demand wrought iron pipe, make sure the nipples are made of Byers Genuine Wrought Iron, too! Long and short nipples are marked with the word Byers. Close nipples are marked with a red band around the center. Made from new, tested, full weight genuine wrought iron, uniformly threaded by precision machinery, minutely inspected. Send for Byers Nipple Folder giving sizes and weights.

BYERS GENUINE WROUGHT-IRON PRODUCTS

PIPE · CASING · COUPLINGS · NIPPLES · WELDING FITTINGS · BLOOMS · RIVETS
SPECIAL BENDING PIPE · BAR IRON · TUBING · PLATES · SHEETS · BILLETS · STRUCTURALS

STANDARD FOR QUALITY FOR 68 YEARS — TODAY BETTER THAN EVER

WASHINGTON



The illustrations shown above, picture a number of abusive shapes into which sections of "Spang" Steel Pipe have been cold worked without breaking either the pipe or the weld. They clearly illustrate the possibilities and easy working qualities of "Spang" Pipe for flanging, bending or coiling. "Spang" Pipe is made by "The Oldest Operating Pipe Mill in America" and is available through reliable jobbers everywhere . . . Black or Galvanized as desired.

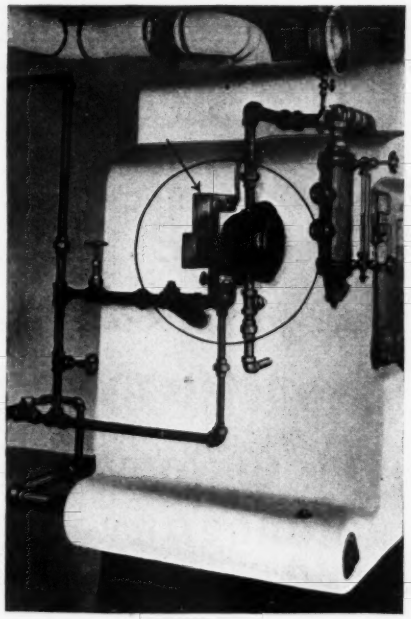
SPANG, CHALFANT & CO., INC.

General Offices, Clark Building

PITTSBURGH, PA.

Sales Offices: New York, Boston, Pittsburgh, Chicago, St. Louis, Tulsa, Los Angeles, Dallas, San Francisco

Welded Mills: Etna, Penna., Sharpsburg, Penna. *Seamless Mills:* Ambridge, Penna.



The Webster Boiler Protector Installed with Water-Feed

Operating Level 1" Above Bottom of Gauge Glass.

AND NOW WITH LOW-WATER CUT-OUT

The Webster Boiler Protector was designed expressly to protect low-pressure boilers against damage resulting from accidental low water—not merely as an automatic feeder. These triple protection features are provided by every Webster Boiler Protector:

(1) Danger-line location (infrequent operation, freedom from flooding).

(2) Powerful hydraulic operation.

(3) Instantly developed maximum capacity.

Now, as an added feature for oil, gas and stoker fired installations, the Webster Boiler Protector may be obtained with

(4) Integral electrical low-water cut-out switch.

Description and installation details sent gladly on request.

WARREN WEBSTER & COMPANY, Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 principal U. S. Cities—Darling Bros., Ltd., Montreal, Canada

a P 16

THE NEED FOR BOILER PROTECTION

The mortality rate for low pressure heating boilers, unduly high for many years, has tended to increase with the growing use of motor-driven return pumps, oil and gas burners and other automatic equipment. Most failures in low pressure heating boilers occur as a result of accidental low water level which may be due to one or more of the following reasons:

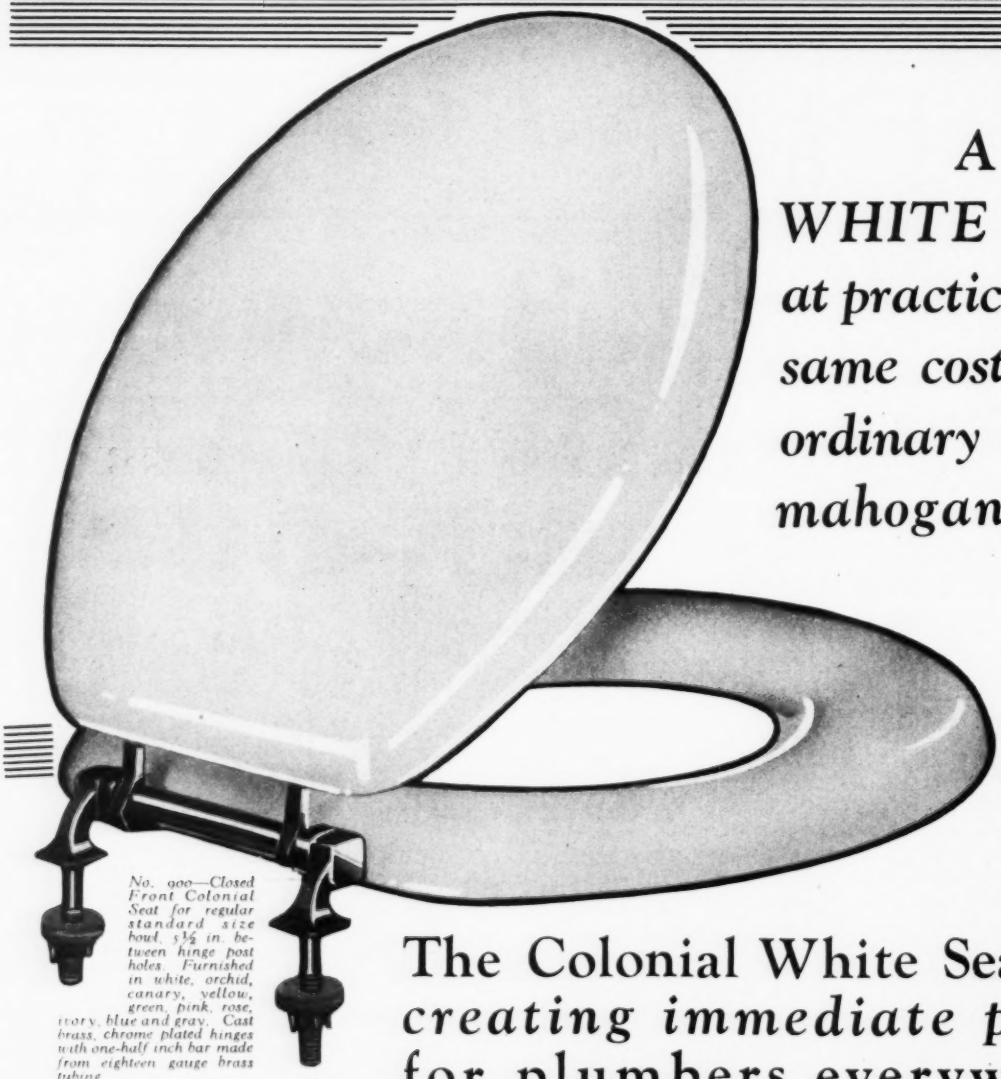
(1) Carelessness, lack of reasonable and desirable minimum of attention.

(2) Priming—due to improper piping or failure to provide a clean boiler and system.

(3) Failure of complex automatic devices.

These conditions, existing in modern heating plants, make protection against accidental low water level desirable and necessary.

The Webster Boiler Protector



No. 900—Closed Front Colonial Seat for regular standard size bowl, 5½ in. between hinge post holes. Furnished in white, orchid, canary, yellow, green, pink, rose, ivory, blue and gray. Cast brass, chrome plated hinges with one-half inch bar made from eighteen gauge brass tubing.

A *WHITE SEAT* *at practically the same cost as the ordinary oak or mahogany seat*

The Colonial White Seats are *creating immediate profits* for plumbers everywhere!

IN THE past there has been a natural demand for white toilet seats. Their beauty lent an appearance to a bathroom that no housewife could overlook. But in many cases, price was the deciding factor and the prospect ended up with an ordinary oak or mahogany seat.

That was before the advent of the Colonial Line of White Seats. These new seats in a few short months have been acclaimed by plumbing contractors everywhere and the sales created by these seats have actually reached astonishing proportions.

This new line of White Seats has changed the seat picture entirely. Today you can get a White Seat, the decided preference in most cases, for only a *few cents more* than the ordinary oak or mahogany seat. Figure it out for yourself. Who of your customers would not pay just a few cents more for a white seat of such exceptional beauty and backed by such a reputation as is boasted of by the MILLER Line of Seats.

Do you wonder that the new Colonial Seat has been creating immediate profits for plumbers everywhere? Ask your jobber or write us for full information. Get all the details and start cashing in on this new white seat business at once.

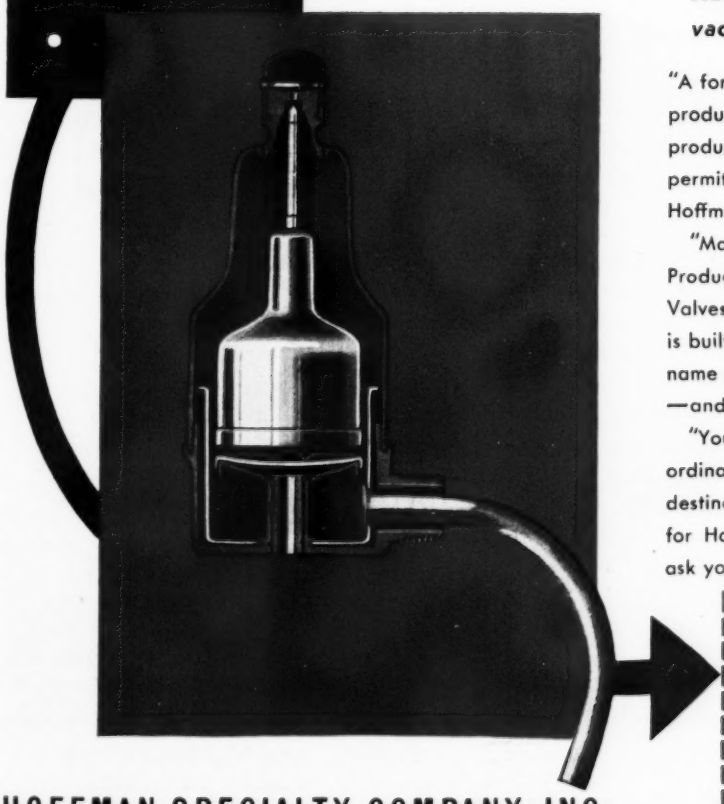
CHAS. A. MILLER COMPANY : STURGIS, MICHIGAN

AT LAST..

HOFFMAN 77 VACUUM VALVE

A VACUUM VALVE AT A PRICE YOU'VE ALWAYS WANTED AND · · · A VALVE THAT I'LL GUARANTEE

HEATING CONTRACTORS *Send for details of* **HOFFMAN PROFIT SHARING PLAN**



Geo. D. Hoffman

. . . . climaxing years of experiment and study to produce a practical and efficient vacuum valve for the low-price field!

"A fortunate combination of ingenious design, mass production and lower material costs, enables us to produce the '77' at a sensational price. A price that permits you to bring the comfort and economy of Hoffmanized Heat within reach of every home owner.

"Make no mistake—the '77' is a *genuine* Hoffman Product! Every feature that gives Hoffman Vacuum Valves their supreme dependability and performance is built into it. For the first time, I'm willing to put my name and guarantee on a low-priced vacuum valve —and proud to do it.

"You must see this valve to appreciate its extraordinary quality and efficiency. At the price, it is destined to create a vast and profitable demand for Hoffmanized steam heat. For full information, ask your jobber or mail coupon."

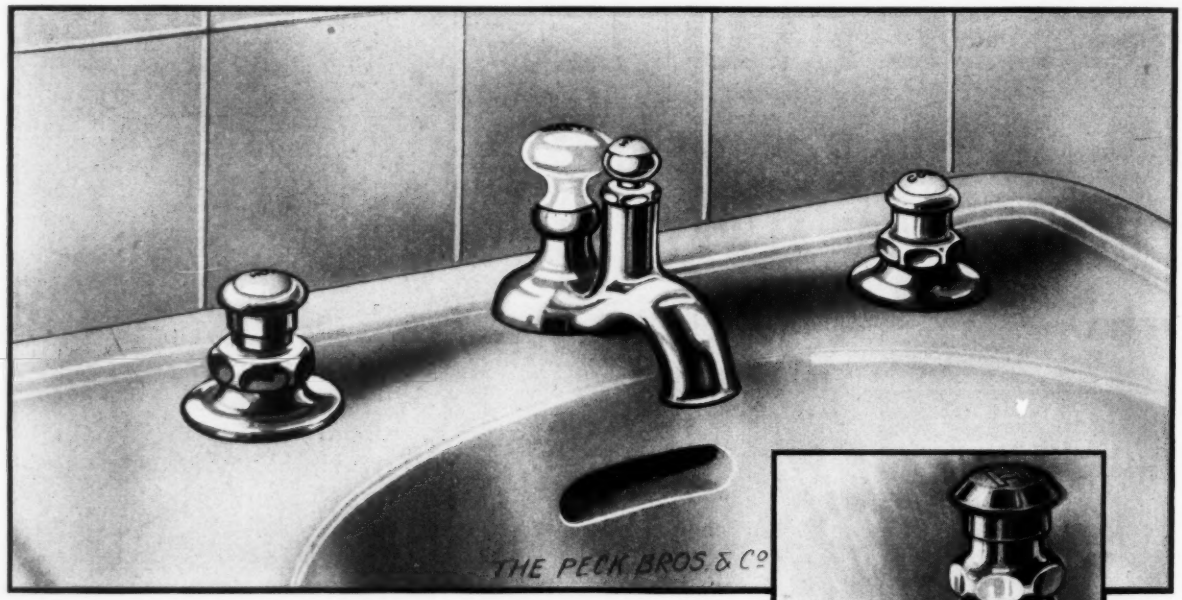
HOFFMAN SPECIALTY CO., Inc.
Dept. RX-84, Waterbury, Conn.
Please send descriptive literature on
☐ No. 77 Hoffman Vacuum Valve
☐ Hoffman Profit-Sharing Plan

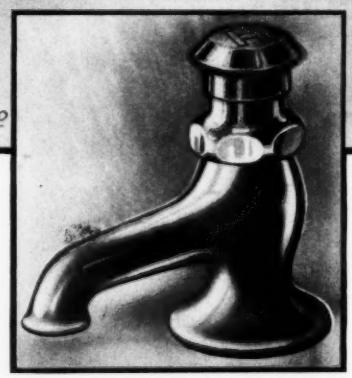
Name .....
Address .....
City ..... State .....

HOFFMAN SPECIALTY COMPANY, INC.
Also makers of Hoffman Controlled Heat and Hoffman-Economy Pumps

SLOW SELF-CLOSING

PUSH BUTTON OPERATION





This fixture may be had in single as well as integral spout combination type

NO need to rinse one hand at a time while the other hand holds the valve open with this new Peck Bros. "Veronica" fixture. The slow self-closing feature permits the user to open the valve and thoroughly rinse both hands before the flow stops.

Push button operation eliminates the slipping of soapy hands so bothersome with ordinary faucets.

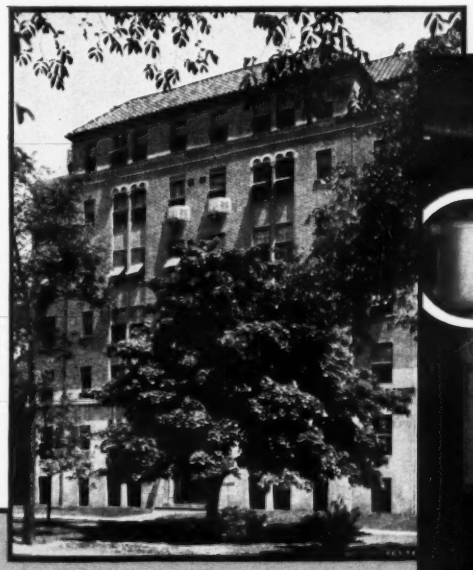
This fixture also delivers ice water through the same spout as the hot and cold water, but through a different channel. It is supplied with or without ice water attachment.

These features combine to make the new Peck Bros. "Veronica" fixture handy to use and easy to sell. Write for full particulars.

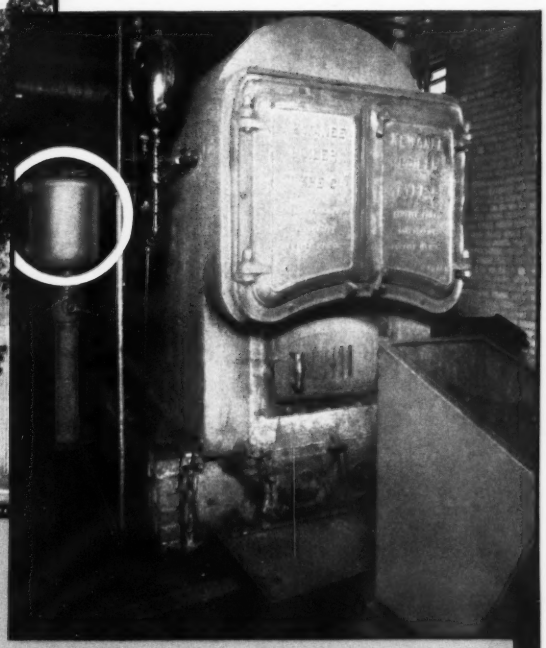
Peck's Better Brass Builds Better Business

THE PECK BROS. & COMPANY

127 CHESTNUT STREET NEW HAVEN, CONN.



Barbara Apartments, 512 W. Grand Blvd., Detroit, Mich., showing installation of No. 44 Excelso to supply 48 apartments with hot water.



EXCELSO

Economy Record Wins Detroit Apartment Installation

STRICTLY on its economy record the city over, an Excelso Indirect Water Heater wins its place in this new Detroit Apartment.

"I have installed Excelso Heaters in both small and large jobs" writes Chas. H. Kantzler, the owner. "Knowing the saving, I chose Excelso for my own apartment two years ago. The installation includes a 1,500-gallon tank, a No. 44 Excelso Heater connected to a Kewanee Steel Boiler, and an Iron Fireman Stoker. Stoker is operated the year 'round.

"48 Apartments were provided with Hot Water during the summer months at an average cost of $22.50 per month. I recommend this arrangement."

Ask for more data on Excelso for economical year 'round hot water supply.

EXCELSO PRODUCTS CORP.
57 Clyde Avenue Buffalo, N.Y.

EXCELSO INDIRECT WATER HEATERS

SIZES TO HEAT WATER FOR ONE FAMILY OR ONE HUNDRED

KLEARWAY VALVE for cleaning rust and sediment from tank, heater and feed lines.

EXCELSO PRODUCTS CORP., 57 Clyde Avenue, Buffalo, N. Y.

Gentlemen:

Please send us particulars of your FREE offer on Excelso ¼" Klearway Valves—a wonderful chance to get some quick profits with heater installations.

NAME .....

ADDRESS .....

CITY ..... STATE .....

OUR JOBBER IS .....

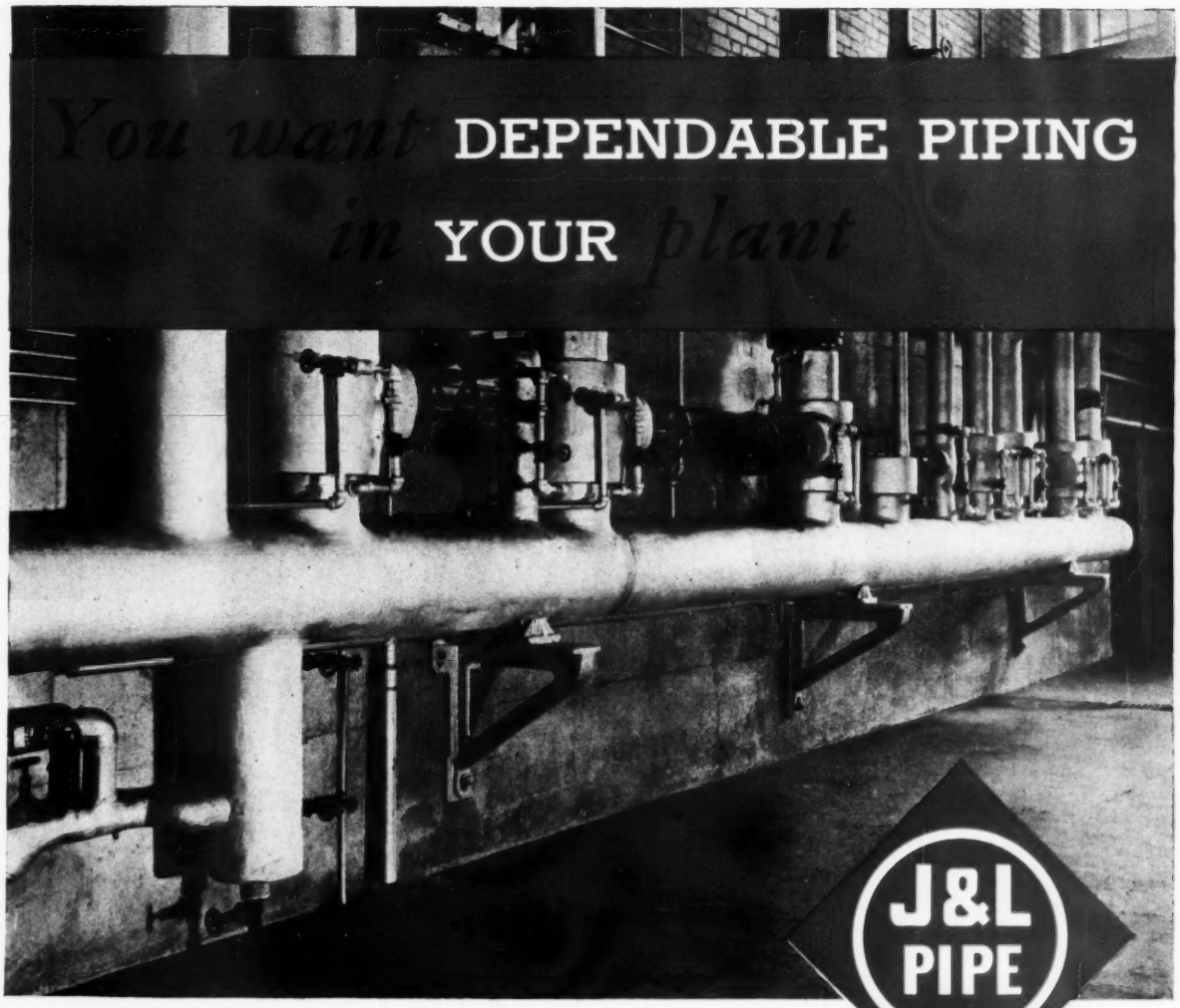
MALLEABLE·IRON·FITTINGS

THE fine workmanship apparent on all M.I.F. Fittings is due to careful inspection at every step in the process of manufacture. From foundry to final testing, each operation in the building of a M.I.F. Fitting is carefully watched by men whose skill and thoroughness have won for them the positions they hold. Some of them are third generation descendants of men who were with the Malleable Iron Fittings Company at its inception.

They cannot help but make good fittings. They are proud of their work and their product.

M|F

MALLEABLE · IRON · FITTINGS · COMPANY, BRANFORD, CONN.



DEPENDABLE PIPING is one of the most important factors assuring safety, efficiency and economy, in both the construction and operation of any plant. That is why J&L Steel Pipe is constantly meeting with wider enthusiastic approval and acceptance for use in industrial plant work. Not only does J&L Pipe promote economy and complete satisfaction in installation but because of its quality, acquired through careful manufacturing operations and rigid inspections, it stands up better and outlasts the safe usefulness of ordinary steel pipe. When making new plant installations or repairs to old ones insist on J&L Steel Pipe. Where piping is to be exposed to alternate wet and dry conditions, use J&L Copper Steel Pipe, which provides increased resistance to rust at minimum extra cost.

J&L STEEL PIPE IS INSTALLED

in hundreds of buildings situated in cities throughout the entire country. If you would like to see J&L Steel Pipe in actual use in your territory, write us and we will supply a list of installations for you to inspect. There is no obligation.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Detroit Erie Los Angeles Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco

Warehouses: CHICAGO CINCINNATI DETROIT MEMPHIS NEW ORLEANS PITTSBURGH

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J&L STEEL CONSTRUCTION PRODUCTS

LIGHT WEIGHT ROLLED CHANNELS JUNIOR BEAMS STEEL PIPE

STANDARD STRUCTURAL SHAPES STEEL PILING BARS FOR CONCRETE REINFORCEMENT

FABRICATED STRUCTURAL WORK including Steel Plate Construction

WAIT!

Don't make your Air Valve purchases until you see the October issue of this publication. Announcement of a

NEW VACUUM AIR VALVE

—revolutionary in design and performance, will be made by W. A. Russell & Co., of New York City, manufacturers of

"Warco"

TRADE MARK REGISTERED

Automatic Air & Vacuum

Valves

No. 940
AMERICAN Compression Bath Faucets with Four Ball China Index Front Handles, furnished regularly with Locknuts and Hose Connection.

CREATE PROFITABLE FALL REPAIR WORK WITH THE American LINE

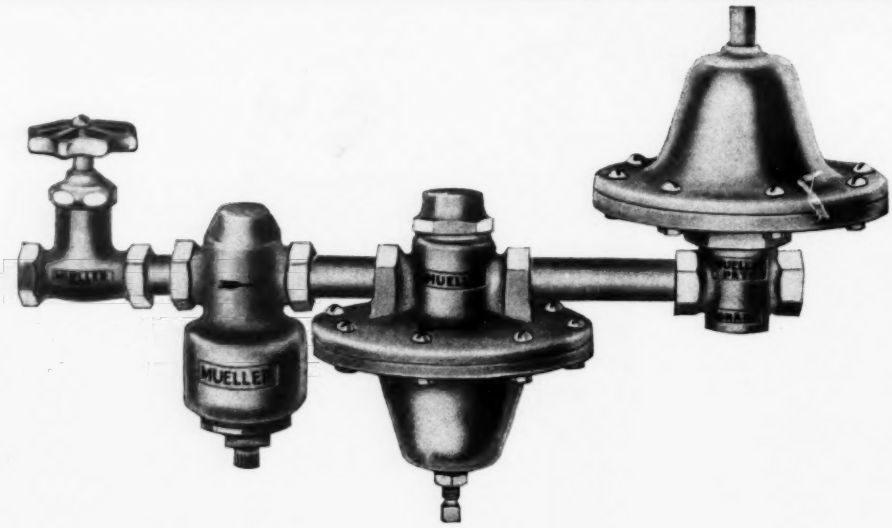
FALL, with its remodeling possibilities and repair work, is ideal for the plumbing contractor offering his prospects the quality, reputation and economy of the American Line of Brass Goods.

Money spent on repair and remodeling work at this time of the year generally centers around the thought of sanitation with its many advantages to the health and comfort of the home-owner or tenant.

The American Line of Brass Goods, modern in price and appearance and long known for its quality and ability to meet the demands of either the large or small home in every way, will enable you to profit in a big way on the repair and remodeling work now available to the progressive plumbing contractor.

AMERICAN SANITARY MFG. CO., Abingdon, Illinois

No. 2302
AMERICAN N. P. Adjustable Bent Tube Trap made of Seamless Tubing. Furnished with Cast Nuts and Sawtooth Flanges.



Profitable Selling

for an Old Job or a New

MUELLER Advantages:

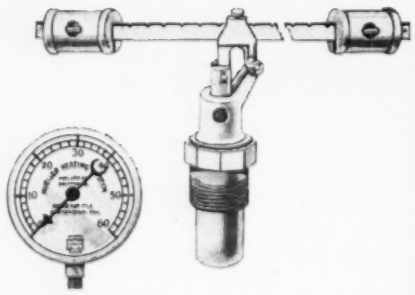
1 Greater circulation due to pressure and fresh water always in system.

2 Entirely automatic as to supply, relief, and damper regulation. Minimum attention needed.

3 Perfectly safe. Valves operated positively by water pressure and are safest types known.

4 Boiling point of water raised—more efficient heating.

5 Substantial fuel saving due to damper control and faster circulation.



There is a rich field for MUELLER Heating system sales wherever there is hot water heat.

Prospects for profitable business are not confined to new installations, for older plants, too, can be equipped with this convenient, fuel-saving automatic control system. The advantages of the Mueller System commend it to contractors and owners alike.

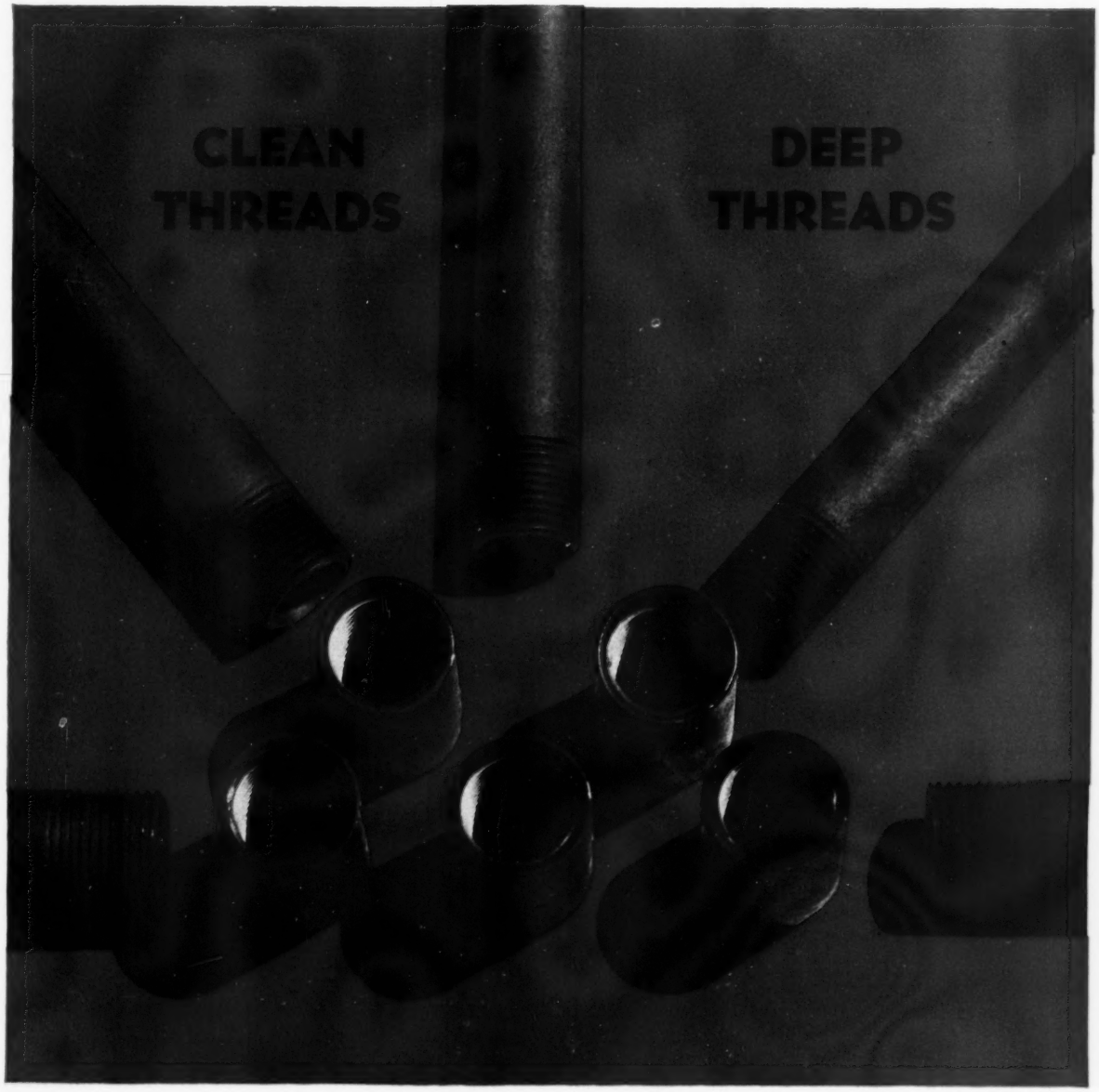
The Mueller Heating system is composed of a regulator, relief valve, strainer, combined stop and check valve, damper control, and a pressure gauge. It provides complete and automatic control of the water supply, pressure relief and dampers. No attention required—and it costs less than the old-fashioned and troublesome expansion tank.

All working and exposed parts are of MUELLER bronze with large open ports to eliminate all possibility of clogging. The extra large sediment strainer is placed away from the other valves in order that it may be cleared without closing the boiler supply or interfering with the adjustment of any valve.

The Mueller Heating system has been approved by the Underwriters and also conforms to the A. S. M. E. Boiler construction code. It effects a considerable saving in fuel due to the automatic damper control and accelerated circulation. Absolutely safe—trouble- and fool-proof—a system that will give many years of complete satisfaction to building owners and tenants. Write today for complete information.

MUELLER CO., Decatur, Ill.

YOUNGSTOWN



PIPE

THE YOUNGSTOWN SHEET
AND TUBE COMPANY

GENERAL OFFICES . . . YOUNGSTOWN, OHIO

Listen MISTER,

LET'S FACE THE

FACTS

YOU are in the heating business to make money. Yet, you are losing profits every day. Profits that should be yours because you are selling the healthful, economical heating millions of homes need. Profits that are going to others because they are selling these families other products. That being the case, let's face the facts about this business of selling modern heating today. Let's forget those days when everybody seemed to be erecting new homes and new buildings. Let's forget those times when orders were thrown over the transom or dropped through the mail chute. They are gone!

This may be disappointing, but it's true. And no amount of remorseful waiting for the old times will make them come back. Good business doesn't come back—*it has to be brought back.* And we've got to bring it back by our own efforts, if we expect to enjoy the rewards.

All the time heating dealers have been waiting for business to return, their neighbors—the electrical refrigerator dealers, the oil burner dealers and the automobile dealers have been busy going out after it. They have worked hard calling on prospects and selling them. And, they are selling every day to families who actually need modern heating first of all. Yet, the heating waits while a new refrigerator, automobile, or radio is bought.

What are you going to do about it?

Well, there is only one thing you *can* do—*go out after business in the same aggressive way these competitors do.* Go out and sell modern heating to those families who don't realize the penalties they are paying supporting out-of-date heating systems . . . families who don't appreciate the savings in fuel costs, the savings in labor, the cleanliness, comfort and protection to health afforded by modern radiator heating.

You are actually rendering these families a real service in selling them radiator heating. You are saving them money, making life more enjoyable and adding more to the value of the house than the cost of the installation. What better investment could a family make? Why should these same families trade in their automobiles every three years to get the new beauty and comforts of the latest models and expect their heating installed 20 years ago to give them modern, care-free service?

Modern radiator heating today offers just as much difference in comfort, economy and care-free operation compared to old-fashioned heating as the modern automobile gives over the old car. Your prospects don't realize this and it is up to you to tell them—and sell them.

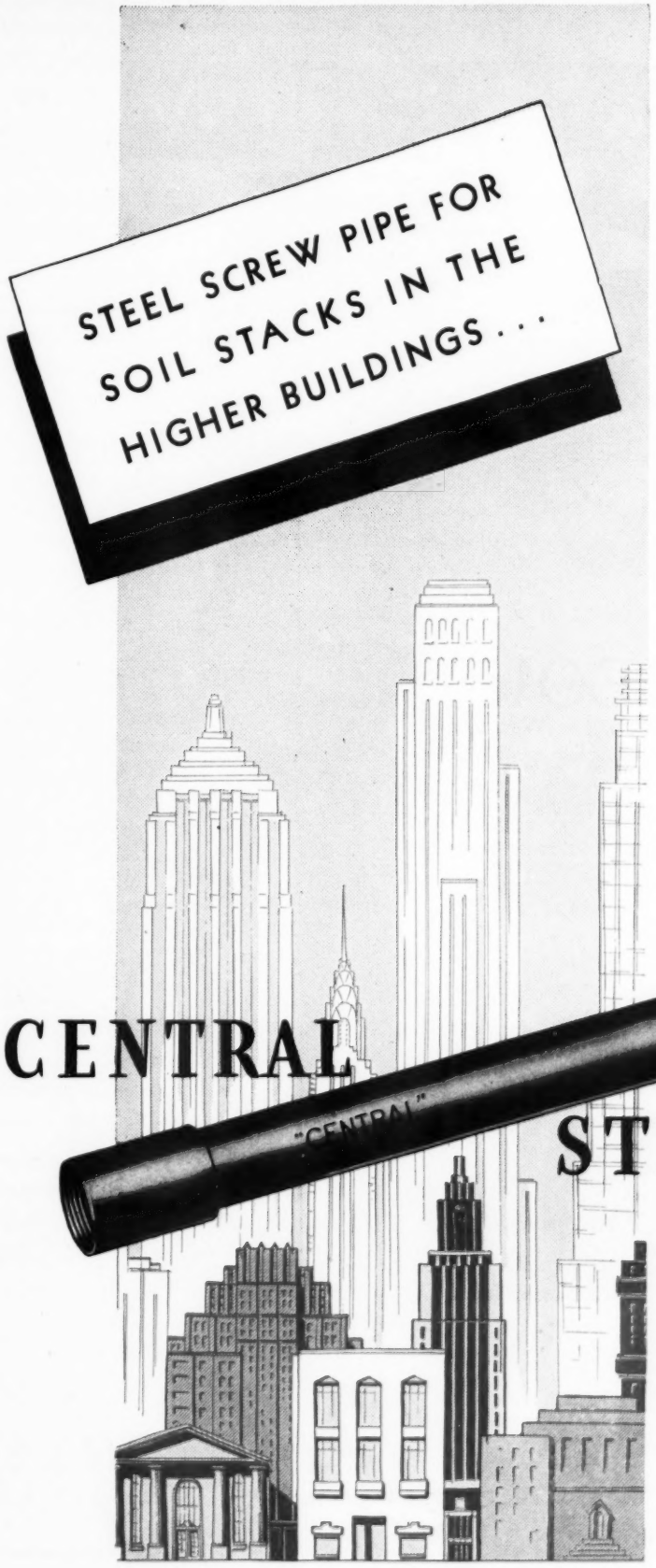
There are nearly 16,000,000 families right now without modern radiator heating. These families can be sold when you point out the advantages you have to give them and the easy way they can pay for modern heating. The majority have bought homes, cars, radios and electrical refrigerators on monthly payments. Many expect to buy heating the same way. And you can sell them radiator heating, too, if you make it easy for them to buy.

If you want to make money by selling these people —neighbors of yours—with a smashing campaign to arouse their interest, bring you inquiries and start you on the way to participation in profits instead of anticipation of them, then write today for details of our modernization campaign "Out of the Red in '32."

AMERICAN RADIATOR COMPANY

40 West 40th Street, New York, N. Y.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION



CENTRAL STEEL PIPE

More Practical
Easier To Install
Withstands Vibration Better

Here is an excellent suggestion for stacks in buildings over three stories in height which you will find profitable not only from a time and labor standpoint but also from a service standpoint to the building owner.

As you know, screw pipe can be installed more easily and quickly because of the elimination of lead caulked joints . . . moreover, steel pipe will withstand vibration better, due to its inherent strength and ductility.

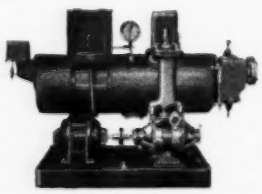
Why not recommend Steel Screw Pipe in your next soil stack installations . . . one of the many different ways you can use "Central" Steel Pipe to better advantage.

CENTRAL TUBE COMPANY
PITTSBURGH, PA.

SIMULTANEOUS CAPACITY!

That quality of being able to do two things at once. A trap drummer can do it, but not all heating pumps can. A return line heating pump has to pump air and it has to pump water. Will the pump you contemplate buying pump both at once? A square foot rating on a heating pump represents nothing but the *opinion* of the manufacturer of that pump that it will handle the returns from a heating system of a certain size. The important thing is: How much air and water will it pump in a minute? After all, that is what you are buying, isn't it? So much air and water a minute pumped at a definite horse power.

Now most manufacturers of heating pumps do give a definite rating of water and air, and most pumps will pump their rated volume of air *or* of water. But what it is important for you to know is whether the pump will handle both together, at once, at the same moment. In other words, *SIMULTANEOUSLY*. Understand, not "Will it pump air and water at the same time?" Some pumps will even do that. Will it pump its *FULL RATED CAPACITY* of air *AND* its *FULL RATED VOLUME* of water and at its *RATED HORSE POWER*, and do it *SIMULTANEOUSLY?* The answer to that simple little question means a perfectly operating heating system with ample reserve capacity for zero weather, and it means a big saving in electricity. It means dollars. Make sure you have it right when you specify a pump, and you will specify a Jennings.

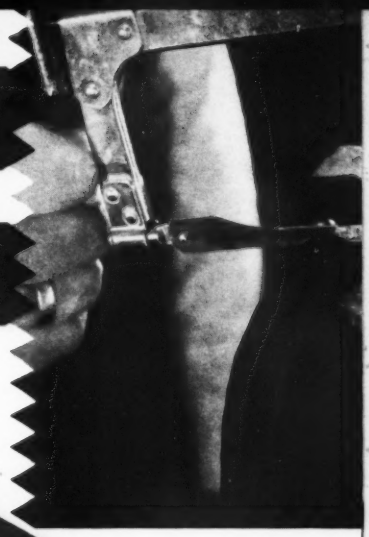


NASH ENGINEERING CO., SOUTH NORWALK, CONN., U. S. A.

Jennings Pumps

SIMULTANEOUS CAPACITY

SWEAT A FITTING
SAW IT IN HALF

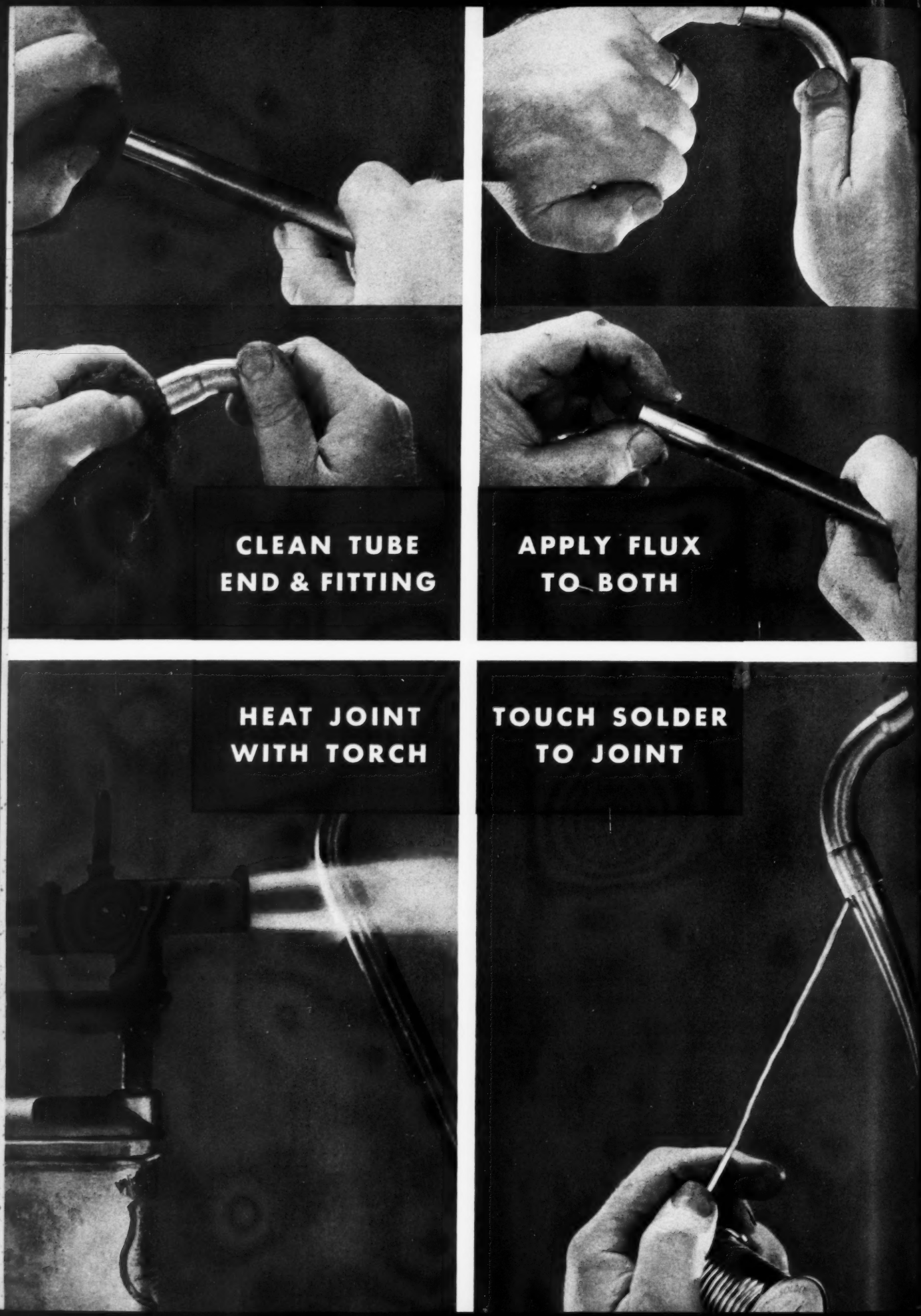


and see that solder ring ↘

CHASE

WE'LL SEND THE MATERIAL

free


CLEAN TUBE
END & FITTING
APPLY FLUX
TO BOTH
HEAT JOINT
WITH TORCH
TOUCH SOLDER
TO JOINT

of a sweated connection

COPPER to COPPER

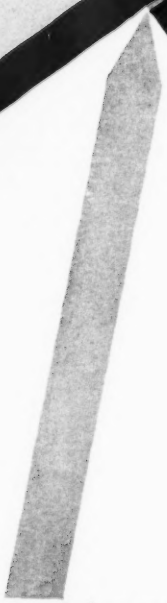
Tube and fittings fit snugly. Chase makes them to close tolerances. You can solder from any angle.

d solder runs uphill .. TO MAKE A 5,000-LB. PRESSURE-TIGHT JOINT

COPPER to COPPER

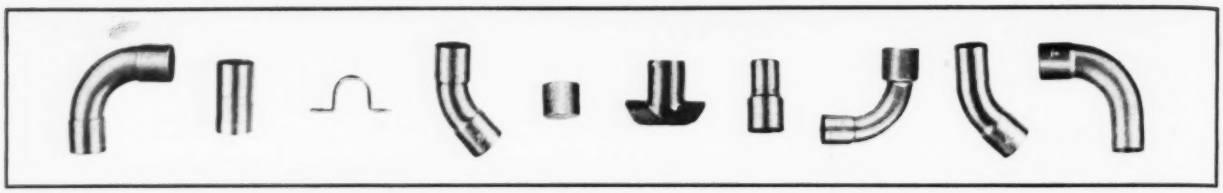
This means...

WITH LESS TIRESOME WORK, AND MORE PROFIT—YOU CAN NOW OFFER A RUST-PROOF CHASE COPPER JOB FOR LITTLE MORE *(if any more)* **THAN RUSTABLE PIPE**



The solder is sucked around and completely up into joint by capillary attraction —an old law of nature.

LIGHTER FITTINGS TO HANDLE . . .



FEWER TOOLS TO LUG . . .

A FEW FACTS TO KNOW . . .

- This is a job with the breaks in your favor.
- You offer your customer a rustproof water line. You make a bid that is attractive to customers and a profit that is mighty attractive to you.
- When you leave the job you won't have complaints. No threaded joints to leak.
- Strong? Proof against even 5000 pounds per square inch water pressure, 3800 pounds of pull. (Tests made on half-inch Chase Tube and Chase Sweat Fittings.)
- Using rigid tube, the job is professional-looking. It takes a plumber to do it.

Now sweat a fitting yourself FREE

CHASE BRASS & COPPER CO., Inc.
Waterbury, Conn.

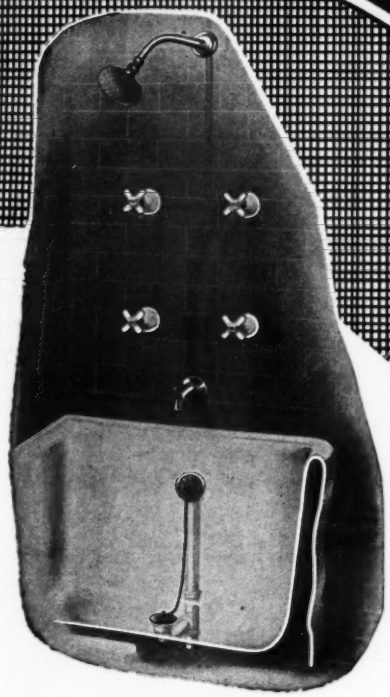
DEs

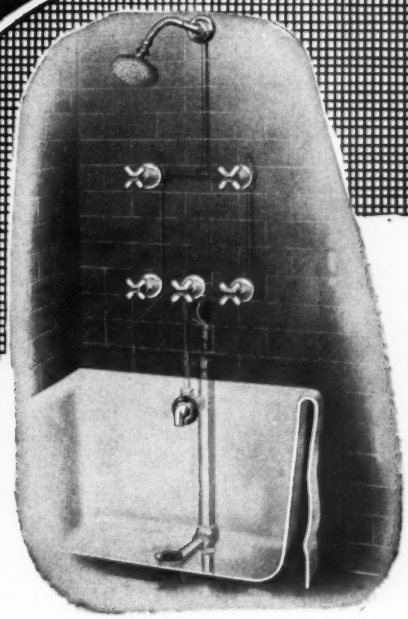
Send me that FREE kit, with all the necessary materials. I'll sweat a fitting, and cut it in half. Then I can see for myself that Chase Sweat Fittings tin themselves all the way around and up.

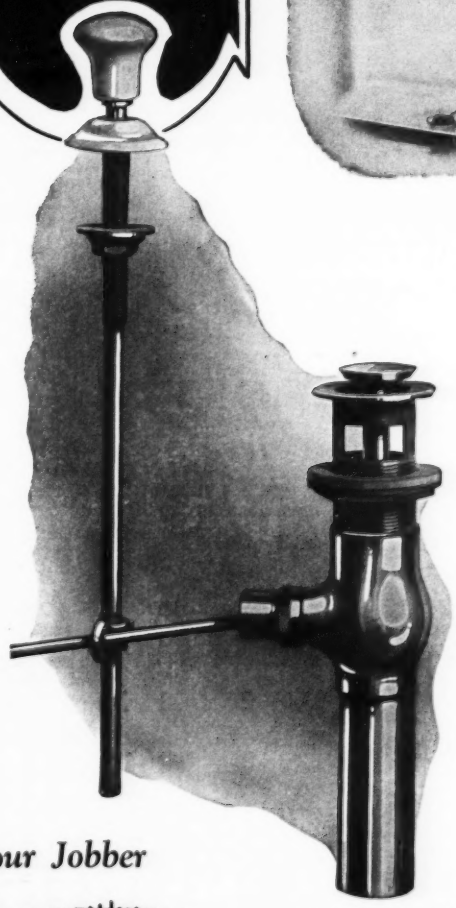
*Name*_____

*Address*_____

WISECO
PLUMBERS PRODUCTS







"St. Regis"
CONCEALED BATH FIXTURES
Through the rim or Over-rim types

"Wiseco"
POP-UP BASIN WASTE
Simplicity and Durability

BUILT FOR QUALITY

J. B. WISE, Inc.
WATERTOWN, N. Y.

New York
Atlanta
Detroit

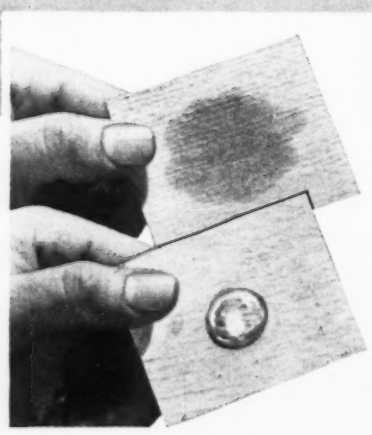
Chicago
Los Angeles
Seattle
San Francisco

THE STANDARD OF QUALITY SINCE 1877

Ask Your Jobber

Tested in the laboratory
Tested in the field

J-M *Pre-Shrunk*



MAKE THIS SIMPLE TEST FOR YOURSELF. *Ask your nearest J-M distributor for samples of the Asbestos paper used in Pre-Shrunk Asbestocel. Then take a sample of the paper used in the manufacture of ordinary cellular pipe covering. Drop water on each. The ordinary asbestos paper will absorb water like a sponge. The Pre-Shrunk sample actually repels it. That is why J-M Pre-Shrunk Asbestocel eliminates shrinkage troubles.*

HOW many times have you been called in to fix up pipe covering jobs that looked like this—only a few months after you installed them? You took the blame — you bore the costs — but it wasn't your fault.

Shrinkage gaps are not caused by poor workmanship, but are due to the fact that the asbestos paper in *all old type* cellular coverings will absorb moisture. This moisture, absorbed while the pipe covering is in stock or during application, causes the covering to expand. Then when the heat is turned on the pipe covering dries out . . . and shrinks . . . sections pull apart at the joints. Gaps ruin the job's appearance. The customer kicks. It costs you money.

Those days are gone forever . . . !

ASBESTOCEL *shows no objectionable shrinkage*

At last a cellular pipe covering that makes friends . . . every job 100% in appearance

BECAUSE Pre-Shrunk Asbestocel is made from *waterproofed* paper, it can't absorb moisture. The cause of shrinkage is eliminated, shrinkage troubles disappear.

Think what it means to be able to apply a pipe covering job and know definitely that it will stay put, year after year, without any unsightly shrinkage gaps to spoil its looks or lower its efficiency. By eliminating objectionable shrinkage, J-M Pre-Shrunk Asbestocel has finally removed a defect hitherto common to all cellular pipe coverings that has caused appliers no end of trouble and needless expense.

Heating and plumbing contractors everywhere have unanimously acclaimed Pre-Shrunk Asbestocel the most important improvement in cellular pipe covering since Improved Asbestocel itself was invented in 1921.

Available in three finishes

Pre-Shrunk Asbestocel is available either with or without the regular canvas finish as follows:

Asbestos covered high-speed—With an attractive asbestos paper finish — costs no more than regular canvas covered Pre-Shrunk Asbestocel.

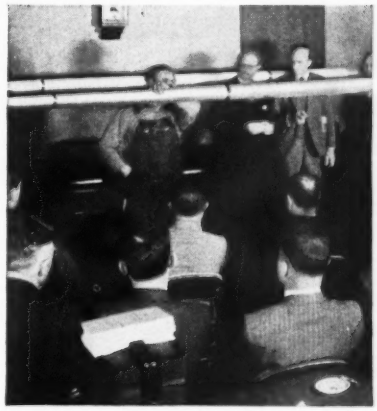
Aluminum finish high-speed—A de luxe covering suited to your most particular jobs. Its handsome aluminum finish does not fade. Only slightly higher in cost.

Regular canvas covered—The standard finish for many years in cellular pipe coverings. Costs no more than old type Asbestocel without the Pre-Shrunk feature.

Save one-third in labor with Non-Canvas Finish Pre-Shrunk Asbestocel

By eliminating objectionable shrinkage, J-M Pre-Shrunk Asbestocel offers still another and an even greater contribution to your work. It has made the non-canvas finish practical!

Now you can have a covering that requires no pasting — a high-speed covering that opens like a book and slips easily over the pipe — clinches on tight with simple, quick-fastening staples.



Stop watch test proves 35.2% saving in application time

On May 17th, at the Commodore Hotel, New York, 22 leading contractors and supply men witnessed the above speed test. A typical applier who had never seen high-speed Pre-Shrunk Asbestocel before, was given two identical lengths of pipe to cover — one with the regular canvas type covering, the other with high-speed non-canvas Pre-Shrunk Asbestocel.

It took him 10 minutes, 25 seconds, to do the job with the canvas type covering, as compared with 6 minutes, 45 seconds, with high-speed non-canvas Pre-Shrunk Asbestocel — a time saving of 35.2%.

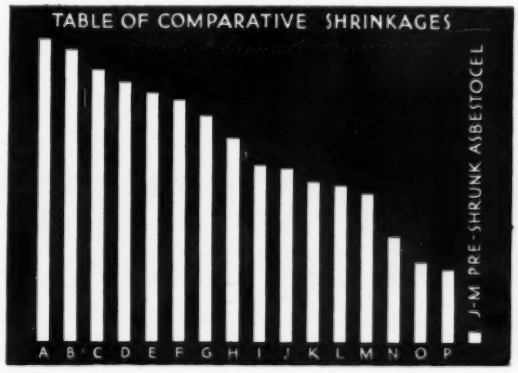
This time saving feature, as well as the Pre-Shrunk feature, is yours at no extra cost . . . a double improvement that means greater profit and improves the appearance and quality of every job you do.

* * *

For full particulars, see your distributor or write Johns-Manville, 292 Madison Avenue, New York.

Ordinary coverings shrink an average of 21 TIMES as much as PRE-SHRUNK

In exhaustive laboratory tests 16 leading brands of cellular coverings were compared with Pre-Shrunk Asbestocel under conditions comparable to service in the field. In some of these coverings shrinkage was 33 times greater than Pre-Shrunk Asbestocel—the average shrinkage for the 16 brands was more than 21 times greater.



Johns-Manville

JM

Pre-Shrunk

ASBESTOCEL

287

Distributors NOW Carry Reading Puddled Iron Pipe in 172 Cities

EVIDENCE of the swing back to genuine Puddled Iron Pipe is shown by the widespread list of distributors who now stock the pipe that made iron famous. Day by day, new names are added to the list as the call for pipe of High Quality and Fair Price grows greater. When you need time-defying, corrosion and fatigue resisting pipe for a job that requires freedom from pipe troubles, you'll find a stock of Reading Puddled Iron Pipe near you. If you do not know the names of your nearest Reading Pipe dealers, write us. There's no obligation, and the information may save you time some day.

READING IRON COMPANY
Philadelphia

Since 1848

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

If Time Means Money . . .

TE-PE-CO URINAL STALL PARTITIONS

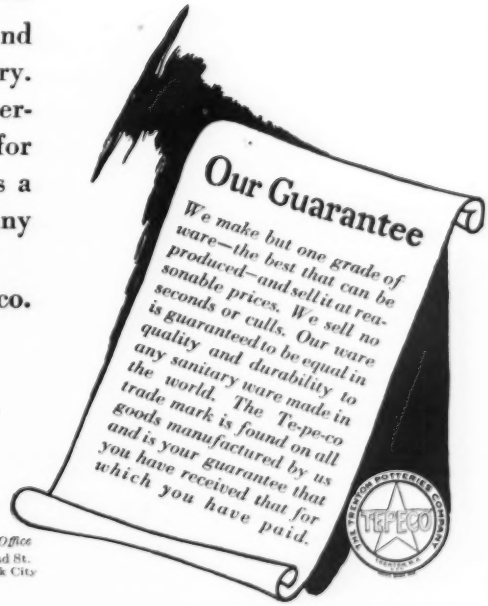
. . . Save the Plumber Many Hours of Installation Costs

ASIDE from the sanitary advantages of Te-pe-co Vitreous China Urinal Stalls, the Te-pe-co design affords an easier and much quicker installation of stalls than is possible with any other kind.

Every battery of Te-pe-co stalls is set up and cut to a perfect fit before leaving the factory. This careful fitting together with the ample overlap of the seam cover to allow adjustment for slight variations in roughing, not only insures a most satisfactory installation but eliminates many hours of the workman's time.

If time means money to you, insist upon Te-pe-co.

Circular on Request


Our Guarantee
We make but one grade of ware—the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.
THE TRENTON POTTERIES COMPANY
TE-PE-CO

TE-PE-CO

THE TRENTON POTTERIES COMPANY
Trenton, N. J., U. S. A.

National Showrooms
New York City—101 Park Ave. Entrance on 41st St.
Philadelphia—Architects' Bldg. 17th & Sansom Sts.

Branch Offices
Boston and Chicago

Export Office
115 Broad St. New York City

It's a nation-wide drive!

Join the "Spend for the Home" campaign

GET your supply of this material today. Here are the prices of the window cards or posters, size 8¼x12 inches.

The prices of these cards are as follows:

10 cards for 50 cents
25 cards for 75 cents
50 cards for $1.25
100 cards for 2.00
500 cards for 9.00
1000 cards for 17.00

We cannot undertake to ship less than 10 of these cards.

Stickers of the slogan, in the same design as shown above but of 1¼ in. x 2 in. proportions are also available. Order these stickers. Use them on your letterheads, envelopes, billheads, business cards, etc., etc.

The prices of the stickers are as follows:

1000 stickers for $1.50
2000 stickers for 2.50
5000 stickers for 5.00

Get a supply of cards and stickers now.

Electrotypes of various sized cuts of the slogan are also available. These can be had for one and two-color printing. Electrotypes are priced as follows:

Electro for one-color printing, 1½x2⅜ in.	$0.35
Electro for two-color printing, 1½x2⅜ in.	.65
Electro for one-color printing, 3½x5½ in.	.55
Electro for two-color printing, 3½x5½ in.	1.00
Electro for one-color printing, size approximately 8x12 in.	2.50
Electro for two-color printing, size approximately 8x12 in.	4.50

Order what you need to get in on this big drive now.

For a very small sum you can identify yourself with this great building industry campaign.

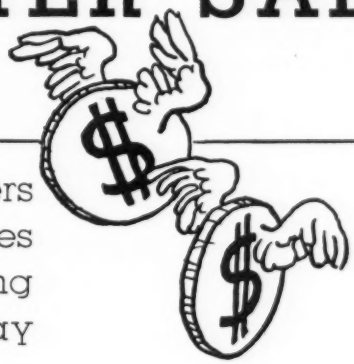
THE building industry is up against tough competition. Other industries are driving for sales. That's why the "Spend for the Home" campaign was created—to drive home the fact that the wisest thing a man can do is to spend for the home. It's his best investment bet.

Other branches of the building industry have taken up this campaign. Plumbing and heating contractors can reap the benefit of this nation-wide effort and win for themselves a greater share of the money that is being, and will be, spent for home improvements.

Get going with this successful campaign right now. Write for the stickers, posters and electrotypes you need to put yourself in line for increased sales.

DOMESTIC ENGINEERING
1900 Prairie Avenue **CHICAGO**

DON'T let those UNIT HEATER SALES Get Away



The American Blower Red Book offers you Direct Mail Literature . . . Sales and Advertising Helps . . . that bring Sales and Installations your Way

EVERY day money is being made selling and installing Venturafin Unit Heaters. You might just as well make it as someone else. The new American Blower Sales and Advertising Red Book will show you how to do it. It contains samples of sales and advertising helps that are yours — entirely without cost—direct mail literature, newspaper advertisements, installation data, window displays, etc., that have been purposely designed for your individual use. Whether you are now handling Venturafin Unit Heaters, are planning to take on this line or not, you will find our Red Book of great assistance in getting those heater unit sales that there are in your territory. Fill out and mail the coupon today.

AMERICAN BLOWER CORP., DETROIT, MICH.
CANADIAN SIROCCO CO., LTD., WINDSOR, ONT.
BRANCH OFFICES IN ALL PRINCIPAL CITIES

HEAT WITH UNIT HEATERS

American Blower
VENTILATING, HEATING, AIR CONDITIONING, DRYING, MECHANICAL DRAFT

WRITE FOR YOUR COPY OF THE RED BOOK TODAY

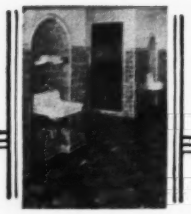
AMERICAN BLOWER CORPORATION (1173)
6000 RUSSELL STREET, DETROIT, MICHIGAN

Gentlemen:
Please send me a copy of the *American Blower Red Book* at once. I understand I will not be obligated.

Name _____ *Firm* _____

Street _____ *City* _____ *State* _____

Venturafin Unit Heaters for Economical and Controlled Heat



BETWEEN OURSELVES

Winter Days

"WE sat in the boat," a friend of mine told me the other day, "and tried to fish but my hands were so cold, I kept them tucked up under my sweater." Just a reminder that along with shorter days, switchovers from daylight saving time and the disappearance in the northern states of the familiar straw hat, the heating season is approaching under a full head of steam.

Just a Job

PROBABLY no definite figures have ever been compiled but we all in this business know what good care does to a heating plant. In the boom days, cleaning a heating plant meant little to most contractors or in fact to almost anybody. Handy men occasionally sold a home owner the idea of cleaning up for a few dollars. Then pressure from other fuels developed a desire on the part of coal dealers to see that the coal burning plant was cleaned up in the summer.

Now An Opportunity

ABOUT the same time, a few contractors started to build up their cleaning services, and simultaneously began using it as a developer of business. The cleaning operation was not especially profitable, but the discoveries that followed of equipment which needed replacement, of the fact that new devices which made for economy were not being used, all of this showed progressive dealers that the simple task of cleaning heating plants could be made to produce business in more profitable directions.

How It's Done

THAT plan is the subject of an interesting and helpful article in this issue, timely for every reader to study and practical for every dealer to adapt to his own business.

A New Sales Policy

AND every reader will find an important news item in this issue on a subject which some one has described as the "most vital problem facing the plumbing industry in many years." It carries just as lively an interest for the heating man as well. The item tells you of a suggested sales policy which affects directly the earnings of every wholesaler and dealer, provided it is generally adopted. Not much need to tell you all about it on this page, because the story is told on Pages 35, 36 and 37. But you cannot afford to miss it.

Here's the Problem

THE new sales policy brings into sharp focus a definite division of opinion on how the plumbing and heating industry will devolop greater effectiveness in selling. Starting behind most other industries to learn how to sell, running into a depression which made sales difficult for every industry, our industry's education in selling has naturally developed opposing viewpoints. We tell you clearly on Pages 35 and 36 just what these opposing viewpoints are. It's worth reading because we have tried to put the industry's most important problem into a few clear cut statements. Knowing what the problem is usually helps more than anything else in solving it.

Another Editorial Service

YOU'RE going to find in the next issue an enlarged editorial service which we feel sure you'll like. The special editorial feature, exclusive with DOMESTIC ENGINEERING, on "Automatic Heat" has proved of practical value to many readers. The subject of automatic heat is so timely, the interest of your customers in the conveniences it brings into their homes is growing so steadily, that we felt we owed it to our readers to give them a definite editorial service on "Automatic Heat." Now in our next issue, you will find that helpful service broadened and enlarged to help you still more in the growing job of making American homes more comfortable and more livable.

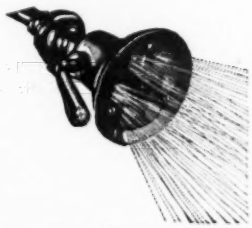
A Broad Field

THE field served by the plumbing and heating dealer is so broad that a business paper to which he can turn for ideas and information must similarly cover many subjects. In this number we carry you from tourist camps to air conditioned homes, from a new form of building contract to relationship with public utilities and in dozens of other directions. We've enjoyed assembling this material for your use.

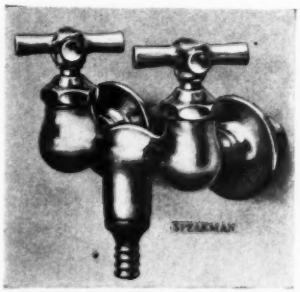
Your Editor

YOUR CUSTOMERS WILL BUY PLUMBING FIXTURES *NOW* IF YOU DO SOME SELLING

You make one profit on the sale and another on the installation . . .
. . . and we'll help you



K-3395—SPEAKMAN Anystream Self-Cleaning Shower Head. Pat. Jan. 2, 1923 and Nov. 3, 1931



K-6778—SPEAKMAN Double Bath Faucet with offset ball couplings

NOW is a good time to sell plumbing fixtures, for all prices are at rock bottom and any price change will probably be an advance.

If you make this plain to your customers and at the same time suggest specific improvements that can be made in their homes you'll find that you'll get some business.

We suggest three ways of going about creating business—when you are doing a job in the house you have an opportunity of pointing out where improvements can be made—a new sink fixture and sink, new lavatory and fixtures, new tub fixtures, a new shower, or replacing the old head with a Speakman Anystream Self-Cleaning Shower Head. These are but a few of the many suggestions that you can make.

Another method is to use the telephone —call up all your old customers.

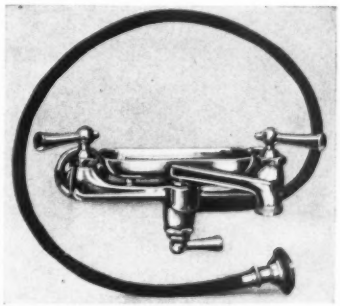
Then there are folders and other literature which you can mail with a letter pointing out the low prices of today. We will supply as many of these folders as you can use imprinted with your name and address—also blotters. If you would like to have stickers for your invoices and letters we'll send these also.

Try this plan and see if you don't get some orders — others do and there's no reason why you cannot.

• SPEAKMAN COMPANY •
Wilmington, Delaware

SPEAKMAN
Showers & Fixtures

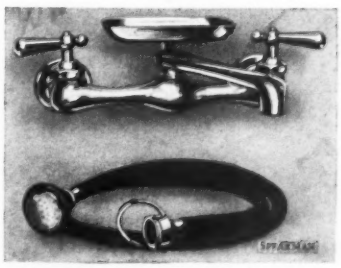
K-5503-M—SPEAKMAN Grace-Line Sink Fixture (Design Patented)



K-5504-M—SPEAKMAN Grace-Line Sink Fixture, with hose and spray head

K-5506-M — SPEAKMAN Utility Sink Fixture

K-5502-M — SPEAKMAN Diamond Sink Fixture (Design Patented)



K-5507-M—SPEAKMAN Utility Sink Fixture, with hose and spray head attachment

THIS WAS EASY FOR A "TOLEDO"

Give your hard jobs to "TOLEDOS." Even though the pipe that is to be cut or threaded lies deep in a trench or under a concrete floor there is a "TOLEDO" to do the job easily and quickly.

Many pipe tool users are replacing with "TOLEDOS," for they know that "TOLEDOS" are sure to give satisfaction and tight leak-proof joints.

"TOLEDOS" offer a complete line of hand and power pipe tools and pipe machines from ⅛" to 12." Send for complete catalog.

THE TOLEDO PIPE THREADING MACHINE COMPANY
TOLEDO, OHIO NEW YORK OFFICE AND DISPLAY ROOM, 72 LAFAYETTE STREET

"TOLEDO"
TRY A "TOLEDO"

Let's Find the Answer to Our Most Vital Problem

THE announcement of a new price policy by two of the leading manufacturers threatens to bring to a decision a conflict between two opposing forces in the field of merchandising plumbing and heating products. Perhaps the advantage of hastening such a decision outweighs the disadvantages of the confusion and disruption which has followed this sudden announcement.

These opposing theories about how plumbing and heating products should be merchandised may be quickly sketched.

One school of merchandising is convinced that the practices of other industries furnish the signposts for us to follow. Lower and lower prices widely displayed; smaller margins for profits for the distributors to be made up by increased volume of sales; the meeting of competing systems of selling, such as the mail order houses, by copying their methods and going them one better if possible.

The other school of thought differentiates the selling of plumbing and heating goods from other lines of retailing. They regard as inescapable the fact that few plumbing and heating items are usable by the consumer as they leave the manufacturer's plant. Instead of a package article which may even be purposely sealed in cellophane by the manufacturer to prove that the retailer could not have soiled its finished perfection, this industry depends upon the engineering skill and service guarantee of its retailers to satisfy its customers.

And instead of those other fields where customers buy and re-buy until through experience they determine what brand they prefer, we have to sell products which people purchase only at long intervals, about which they know little so that the retailer becomes the one to whom the customer turns for advice and assurance. And for that reason, this same retailer rather than the general public, is the one upon whom the manufacturer must depend for enlarged sales.

The plumbing and heating industry took up merchandising long after many other lines of business. Only a few years ago, speakers were drumming into our ears the startling discovery that our products had been bought by a public which needed them. To keep enlarged plants busy and more and more distributors active as demand dropped, we were told we must learn to sell. We could no longer sit back and wait for the public to buy.

Since that fact was discovered, it is significant that much of our efforts to become expert merchandisers have been in imitation of the methods of other industries.

It is worth the time of any executive, whether in the retailing, wholesaling

or manufacturing line, to stop now and decide whether the nature of our business is not fundamentally different from most of those lines whose methods we have been trying to copy and whose successes we have envied.

This industry has been built up along distinctive lines. Municipal, state and federal authorities have united in the public interest to surround the sale and installation of its products with code regulations as a protection to health. Most other branches of the building industry drifted naturally to the point where the craftsmen became labor foremen or routine retailers. Our retailers, almost alone, have retained their place as both the seller and the skilled installer.

ARE OLDER METHODS UNSOUND?

Behind that mantle of protection, the industry may have grown sluggard in sales effectiveness—not only the retailers but wholesalers and manufacturers as well. Has the experience of a few years in trying to learn to sell—years incidentally of great depression for every business—proved that our old methods are fundamentally unsound?

Emphasis is frequently placed on the price "mystery" surrounding this field, due to the inability or unwillingness of the retailer to quote a price until he could estimate the installation charge. This brought the resultant disadvantage that the wholesalers, who had assumed the burden of financing show rooms, in turn could not exhibit prices plainly for all to see.

Everyone in the industry understands the difficulty of quoting such prices, but how much effort has been made to spread that information among the public? It is a simple matter for the groceryman to put a price tag on a pound of coffee, but much more difficult for the plumbing and heating dealer to tell promptly what an installed piece of mechanical equipment—whose service he must guarantee—will cost. And the final cost is of primary interest to the customer.

On this question of price "mystery," longer experience has taught all of us that national advertising almost exclusively of the expensive plumbing and heating products was a mistake. It confirmed rather than dissipated the public's impression that such products were high.

Will this industry grow to greater strength by thinking primarily of the customer and thus trying to make our products and our services an over-the-counter affair? Or will its maximum strength come from minimizing the price question and doing a better job of building on our experienced contractor-dealer? Should our approach to the public emphasize price only, even if price is the predominant factor at the present time, or should we tell more of the reasons why our products require assembly and installation by skilled men, licensed by law and trained by experience? In that case, price becomes a secondary element.

This newest price announcement can thus be welcomed because it hastens a critical study of these questions. Quite frankly, we do not feel that the leaders of our industry have given the question, up until this time, the fundamental study it deserves.

The plumbing and heating industry by its complicated nature has an element of strength denied to other industries. The involved character of its products makes the public dependent upon us for service. This factor can be turned to the advantage of every branch of the industry. Emphasis on price abuses rather than uses our strongest weapon.

New Sales Policy Stirs Industry

CHANGES affecting the sales of many plumbing items are announced in some sections by two of the largest manufacturers. These changes carried sharp suggested reductions in the customary allowances for wholesalers and retailers, thus making the recommended price to consumers considerably lower than those previously in effect.

This new policy of a suggested lower price to consumers has aroused tremendous interest among both retailers and wholesalers. The manufacturers' announcement carried the suggestion that the plumbing trade use the new list prices as retail prices. Wholesalers and plumbers were asked to show these prices on fixtures in their display rooms.

Prompt response to this announced change in policy was made by both branches. Smaller groups of wholesalers in many sections immediately held meetings to discuss the meaning and effect of the change. The newly organized Plumbing and Heating Wholesalers of New England Inc., through its board of directors and its president, M. W. Dennison, made plans for a national meeting of wholesalers. Such a special meeting is being held at Chicago as this issue goes to press. Contractors similarly have been stirred by the announcement but no official viewpoint has been made public.

INDUSTRY'S MOST VITAL PROBLEM

Many regard this suggested change as the most vital problem which has confronted the plumbing industry in years. Favorable as well as unfavorable reactions have met the announcement. Some of the unfavorable reactions base objections more on the abrupt nature of the announcement than on the underlying policy. Such opposing arguments, made by wholesalers, object to the investments of wholesaling and retailing groups being imperilled by manufacturers' policies, without first consulting those related groups; object to a policy which concerns itself with maximum prices but not with minimum quotations; object to the suggestion of a uniform schedule of profit on all items, regardless of quality or volume and object to meeting competitive practices on a few items by including all plumbing products.

At least one definite result from the announcement has been the surprising freedom of discussion about discounts which both wholesalers and retailers receive. These discounts as between manufacturer and wholesaler and between wholesaler and retailer have naturally been regarded as questions for the confidential information only of the companies concerned. But this announcement by cutting in two the spread between manufacturers' selling price and the consumers' buying price, has made public to the retailers the price which wholesalers will pay and thus led to active discussions of the proportion which each of the two distributing groups should and would receive.

One of the best discussions which DOMESTIC ENGINEERING has received about this question comes from a man qualified by long experience in the plumbing and heating field to appraise this suggested policy. Because of the nation wide interest drawn to this subject, we are reprinting this letter in full, without disclosing the name of its writer:

"Wholesalers and Contractors Can Not Exist"

THE recent announcement of new list price by some of the leading manufacturers of plumbing fixtures has created quite a stir in the industry and that is to be expected. Any decided change from regular practice would naturally be subject to criticism and careful study, and with so many gestures within recent months at direct selling by wholesalers to consumers, we can not blame those opposed to such a move if they look upon this recent announcement with suspicion. Each suggested change may have some merit, but this like others, must be analyzed to determine whether the advantages offered will offset the disadvantages which may result from the change.

"I do not believe that the suggested margin of profit set up for the wholesaler and contractor can be divided in any way that will permit them to exist in their present form.

"The cost of stocking and distributing the many items now used in our industry creates an expense, the amount of which (allowing for some variation) is pretty well known. This is the wholesaler's function, and his only chance to make a profit is from the sale of materials.

"The situation in the contracting branch of the industry varies considerably, for in addition to the sale of materials he also has his labor, which is often equal to or even more than half the amount of the total sale. On this item he has no competition from the other branches of the industry and he should make a reasonable profit on his labor.

CONTRACTOR SET-UPS DIFFER

"His competition on materials, however, is more grievous and enters from several different angles. First, we have the mail order and direct-to-you houses that have made some progress and are affecting all branches of the industry. Second, we have the several different types of contractor set-ups.

"It is hardly necessary to comment on the so-called large operator who confines his efforts to large jobs and represents a distinct group. His is rather an exclusive field, and a comparatively small percentage of the contractors are attracted to it.

"The small job operators are more plentiful, many of them operating from their homes, which affords a very economical and inexpensive method of operation. When building was plentiful, many of this class of operators did little or no repair work.

"Then we have the contractor who devotes practically all of his time to repair work, service, and small re-

(Continued on Page 149)

Fig. 1—"The boiler and pipe covering were vacuum cleaned to a degree where you could tell that they were really white and the exposed boiler ironwork was painted black. However, the real difficulty comes when we have to get rid of dirt and grease inside of the heating system"

Cleaning and

The first part of this article tells how one heating contractor has found it possible to stimulate his fall business by promoting the repairing of heating plants. The second part of this article contains information based on the experiences of engineers of the Anthracite Institute. Complaints on five thousand jobs are summarized.

TEN years ago, when I announced my intention of leaving the business I was then engaged in and joining my brother who was a heating contractor, my associates jokingly said that they would like to run into me some day when I was down in a basement cleaning out a dirty old boiler. I did not realize then how many dirty old boilers there were to be cleaned, but I think that the laugh is on them now that I have found what a profitable end of the heating business the cleaning of dirty old boilers has proved to be.

The sales are not large, running from five to twenty-five dollars, depending on the nature of the work done, but from a volume of such sales the profit mounts up.

HERE IS A PROFITABLE JOB

Who could scoff, for example, at such a sale as was made to a Mr. Brown of our city for putting his heating plant in order for the coming winter. The job record, covering which, read as follows:

Clean base of flue
Plaster smoke pipe
Clean boiler flues
Weld shaker handle

Selling price $12.00. Cost (including overhead), $5.95. Gain, $6.05.

In this era of beautifying basements it is surprising to find how many people still neglect them, and for the most part because of the hard to clean and hard to keep clean heating equipment which makes beautifying a difficult and unstable process. As the source of most of the dirt is the heating plant that is the first thing to be cleaned, and right there is an opportunity for a job for a heating man, maybe not a large one, but one that will pay a profit.

In making our rounds we run into many decided con-

Repairing Heating Plants Offer Profits for Fall

By C. B. DAWSON

trasts in basements, some that would put the average living room to shame, and others that are dark and damp and cluttered with accumulated rubbish. Such a basement as the latter was that in an old residence which had been vacant for a long time and where we cleaned the heating system recently. We had to start first in the firepot of the boiler which was full of papers, tin cans, and whatnot, dumped there to await a future cleaning day which never came.

HOW WE DO THIS WORK

Those out of the way, we scraped the flues and heating surfaces which were caked with soot and scale, cleaned the grates and ashpit, and then called into play our vacuum cleaner with its powerful suction to gather the soot and ashes inside the boiler which we had been unable to collect by hand. Next we took down the smoke pipe and found it comparatively clean but rusted out, and then we cleaned the base of the flue, where it seemed the soot of years had accumulated. Fortunately there was a clean out door in this flue. Many of the older flues do not have them.

While this work had been going on, we had been letting the system drain and since it was a hot water system, it required a considerable amount of time. We then started to refill the system, one man going upstairs to let the air out of the radiators, the other remaining in the basement to cut off the water in case of trouble and to putty up cracks around the boiler base, put up new smokepipe, and plaster it securely into the flue opening. The boiler and pipe covering were vacuum cleaned to a degree where you could tell that they were really white, and the exposed boiler ironwork was painted black. That completed our part of the program but with sunlight admitted through the dirty windows and the walls whitewashed as we recommended, this basement will really begin to look as a basement should look.

The United States Bureau of Mines has estimated that the smoke damage in American cities runs from $12.00 to $17.00 per capita and judging from the damage that we ourselves run into, this must indeed be true. Curtains, rugs, walls, and furniture are ruined by smoke from dirty and improperly fired heating plants, much of which we can alleviate by cleaning and instruction as to proper operation.

In another large residence, owned by an elderly woman who once had much more of this world's goods than she has today, we cleaned the heating plant not long ago. Her furnishings, old and elegant, and the valuable paintings that lined the walls, were begrimed with soot. Formerly servants operated the heating plant, but in the last few years she had attempted to do it herself. We noticed an unusual evidence of soot which had come up from behind the baseboards and around the door and window frames and asked if she had had any trouble with her boiler smoking. "Yes," she said, "she had quite a lot of trouble that way. Every time she went down to fire up, smoke puffed out and filled the basement." We looked at the smokepipe damper. It was closed. "Do you open this damper when you fire up, Mrs. Swann?" we asked her. "Why, no, I don't," she replied, "I didn't even know it was there."

CLEANING THE INSIDE OF BOILERS

Mrs. Swann had a hot water heating system with indirect radiators. We instructed her how to operate it, so that she should have no more trouble with it smoking, vacuum cleaned all indirect heaters, all circulating ducts, both cold and warm air, cleaned up the boiler, smoke pipe, and base of flue thoroughly, so that she should have a good start for the winter as far as her heating plant is concerned. For such service and instruction she paid us $23.00, not bad, we should say, for half a day's labor and a small amount of material.

Fig. 2—"Then, we cleaned the base of the flue where it seemed that the soot of years had accumulated. Fortunately, there was a clean-out door in this flue."

So much for surface dirt. The real fun comes when we have to get rid of grit and grease inside the heating system. We inspected a system several months ago where the basement was in apple pie order and the boiler was as clean as a whistle as far as grates, flues, etc., went, but dirty black greasy water was showing in the gage glass. While we were looking around Mrs. Boyd, the owner, said, "We have had some little trouble with one or two of the radiators heating up, Mr. Dawson, and some of the pipes make an awful noise. What do you suppose the trouble is?" "It is probably because the system is dirty, Mrs. Boyd," I told her. "Dirty!" she exclaimed, "Why Mr. Dawson, what do you mean?" "Yes, it is dirty inside the pipes and boiler." "But Mr. Dawson it was new only last fall." "Quite so, Mrs. Boyd, but it was dirty even then from oil in the pipes and compounds used in making up the joints and the like."

Trying to explain to a woman who is a good housekeeper that her new heating system is dirty is a task in itself, but Mrs. Boyd was more amiable than many, and though when I finished my explanation I still did not think that she understood how the condition could exist, she agreed that if I said it was dirty it must be and that she would leave it up to me to take care of it as I saw fit. Experience, and much of it sad, has proved to us that the only way to completely get rid of this inside grease is to blow off the boiler and blow and blow and blow until not a trace of grease remains. Flushing of the boiler and the like of that may remedy the condition temporarily as it will get rid of a certain amount of dirt and grit, but it does not get at the seat of the trouble, for the grease adheres to the heating surfaces. On Mrs. Boyd's boiler as on all other boilers that prime and foam, we disconnected the return lines from the boiler and allowed all condensate to discharge to the sewer.

CONDENSATE DISCHARGED TO SEWER

On the average job, discharging for about eight hours will solve the trouble, although larger jobs take longer. In this way the entire system was washed and washed out thoroughly until the water showed clear in the gage glass and a steady water line could be maintained.

The sales cost of cleaning service must be watched carefully, for there is no point in making a $5.00 sale if it has cost $5.00 to make it. One concern in our city has a number of inexperienced men out making a house to house canvass to get the names of people whose heating plants need cleaning or repairs. Then they have to send an experienced man back on these prospects to make a sale. Another company uses the ruse of sending men around "to paint your boiler free," but they have incurred considerable ill will by doing so, for it seems to be a part of their system while painting a furnace to tear it apart and find fault with it, thus making themselves or somebody a job whether or no. For our part, while perhaps we do not make as many calls as some of the others, we find it profitable to see as many people as possible and to get as many direct leads from as many different sources as possible, but to send on all prospects a man who can look the job over, see what the trouble is, give a man a price and get his yes or no right then and there.

This year, starting the middle of May, he has called on all of our installations, many of which he found had changed hands since last we contacted them, and on all other customers for whom at one time or another we had done any heating work. Small sales, running up into several thousand dollars, have already been made to this list alone. A thousand penny postcards, telling of our cleaning and repair service, were sent out to people whom we did not know but were sure had heating systems, and 150 replies have been had from them. Our co-operation with the coal dealers also proves a steady source of inquiries and revenue.

CO-OPERATION WITH COAL DEALER

Several years ago we hit upon the plan of working with the coal dealers and sent them the following letter which met with a ready and welcome response.

Dear Coal Dealer:

We are sure that you are always anxious to render

Fig. 3—"We had to start first in the firepot of the boiler which was full of papers, tin cans, and what not, dumped there to await a future cleaning day which never came"

every possible service to your customers, and to those who may eventually become customers.

Would you like to have available a heating inspection service which you could offer without charge, a service whereby an experienced heating man would make an inspection and complete report to your customer as to the condition of his heating plant?

You need feel no hesitancy in offering such a service, for it is a real accommodation to an owner.

INSPECTIONS BACKED BY REPUTATION

You can be assured of the quality of these inspections, backed by our reputation and experience, and which we offer to make for you without charge. We are, however, not a charity institution and naturally expect to get some returns by way of cleaning and repair work that we may pick up.

If you would be at all interested in the plan, won't you call us at once so that we may go into the details of the arrangement and begin immediately to cooperate with you. Very truly yours,

Dawson Heating Company.

We also went so far as to make up for those coal dealers interested, a series of letters which they in turn could send out to their customers, offering them this service.

The promotion of our cleaning and repair service is also carried into our radio advertising as in the following announcements:

"Soot and scale in your heater or dirt and grease in your heating pipes will cause you to burn more fuel and get less heat. Let the Dawson Heating Co. clean out that soot and dirt and grease. Then watch that cold room get hot quickly."

Or—

"NOW is the time to see that your heating plant is in shape to give you the very best possible results, both as to comfort and fuel saving. It is smart to be thrifty, but it is poor economy to worry along with a heating plant that needs cleaning, has a poor draft, is slow to heat up, or perhaps needs only some minor adjustment to make it efficient and inexpensive to operate."

In selecting and installing new equipment we have found that ease of cleaning should be taken into consideration and proper provision should be made for future needs at time of installation. Man holes in hot water storage tanks, clean out doors in flues and convenient cellar drains are among the conveniences that should be provided. On heating service jobs we have had many opportunities to recommend such features.

Aside from the immediate profit to be made from every cleaning job if handled properly, we work on the theory that where we clean a heating plant thoroughly, promptly, and courteously, the owner is going to think right quick of the Dawson Heating Co. if ever he needs a new boiler or other new equipment. Our idea is that the smallest cleaning job done well may lead to a big heating installation.

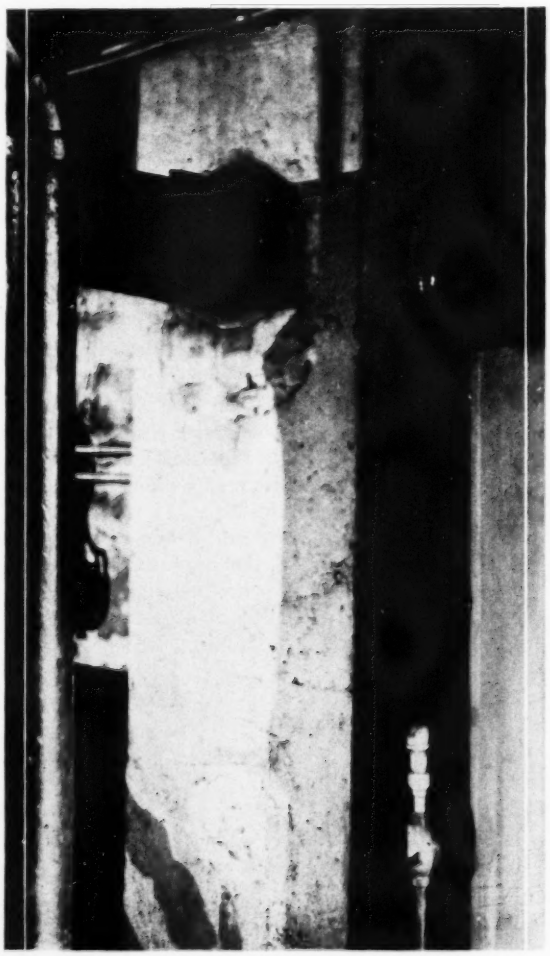


Fig. 4—"The other man remained in the basement to putty up cracks around the boiler base, put up new flue pipe and then plaster it securely into the flue opening"

EXPERIENCES OF ANTHRACITE INSTITUTE

The extent to which unsatisfactory domestic heating is attributable to the condition of the equipment and carelessness in its operation is graphically presented in a "break-down" of the findings of a series of investigations in 5,000 private homes by the Anthracite Institute.

The various offices of the Anthracite Institute have, for years, sent trained men to investigate the causes of complaints on Anthracite, and from records thus obtained the interesting fact was derived that, although the householders invariably believed their fuel was at fault, the study proved in virtually every case that the trouble was either with the equipment or its operation.

Condition of the equipment accounted for 62 per cent of the dissatisfaction reported. Neglect of deposits on heating surfaces was the greatest single factor of heating plant inefficiency, and smoke-pipe trouble was the next largest.

Method of firing and general operation comprised 36 per cent of the trouble, and here the householder had his own carelessness and inattention to blame, or his ignorance of the proper size fuel for his

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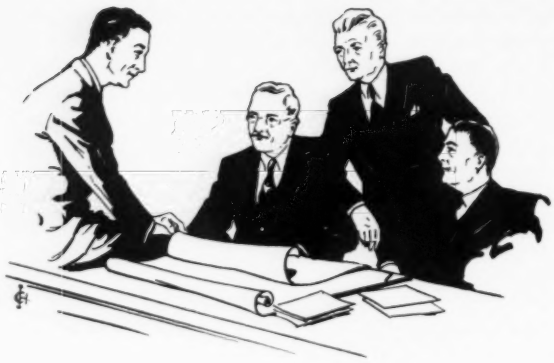


Bid Shopping Evil Corrected In Adoption of New Plan

ERIC T. HUDDLESTON developed and tested ideas in practice

A NEW plan designed to correct the evils resulting from the "shopping of bids" by the general contractor on construction projects has been adopted by the various branches of the building industry in Boston, Mass., and vicinity. Developed by Professor Eric T. Huddleston, supervising architect of the University of New Hampshire, Durham, N. H., the plan is known as the "Huddleston Plan."

HOW IT WORKS

Briefly, it provides that the general contractor be selected on the basis of his bid for the work which is to be done by him as general contractor, without any reference whatever to the cost or prices for sub-contract work. Since the award is made on the basis of the work to be done by the general contractor only, there is no incentive for him to shop for bids among the sub-contractors. After the general contractor has been selected, the owner, architect and general contractor confer and determine which sub-contractors shall be selected, based on the bids which have been submitted by the sub-contractors to the architect as well as to the various general contractors who may have figured on the job. Ability to perform, experience and financial standing, as well as price, enter into the selection of the sub-contractors. Also, any valid objection that the general contractor may have to a sub-contractor is taken into consideration, as the selection of sub-contractors, according to sponsors of the plan, might well be a matter of mutual agreement between the architect, the owner and the general contractor instead of leaving the decision to the owner and the architect alone.

Those supporting the "Huddleston Plan" point out also that it goes one step farther than other methods of awarding contracts that have been used in the past. Some architects' offices have used a method requiring the naming of sub-bidders, usually without prices. The "Huddleston Plan," however, it is explained, eliminates the sub-bids as a factor in the award and therefore takes away any advantage which might result from shopping. Also, the sub-bidder, when he is selected and notified knows that he was awarded the work on the basis of his bid to the architect and therefore does not even have to consider cutting his price.

The plan has already been followed on several construction jobs in the New England territory with excellent satisfaction. Professor Huddleston has used it with marked success on three different building projects at the University of New Hampshire.

The Boston Building Congress, at one of the largest meetings in the history of the organization, gave its unanimous approval to the "Huddleston Plan" and the Massachusetts State Association of Master Plumbers, at its recent convention in Boston, also endorsed it.

PLAN GIVEN GENERAL ACCEPTANCE

Just recently, the executive committee of the Boston Society of Architects, a chapter of the American Institute of Architects, held a hearing to receive the petitions of the various building trade organizations in the Boston territory that the architects put the plan into operation. Among the trade associations represented at the hearing and in favor of the plan were the Building Trades Employers Association, the Associated General

Contractors' Association of America, the Heating and Piping Contractors Boston Association and also many other local sub-contractor associations.

Under date of May 20 a bulletin was issued to all members of the Boston Society of Architects, advising them of the action of a committee appointed by the executive committee of the society relative to the use of the Huddleston Plan. This bulletin says "The committee, in accordance with the instructions and authority of the executive committee, ask your careful consideration of the document (Information to Bidders and Proposal Form) sent you herewith which outlines a procedure which has been approved by the executive committee and urges you to respond to its recommendation and make a trial of the procedure at the first opportunity.

"This committee would call your attention particularly to the reason for this action as to certain points involved in the new procedure proposed.

"There is a practically unanimous sentiment in favor of this procedure among both general contractors and sub-contractors who desire to have the practice of shopping of sub-bids abolished. They realize it cannot be done without the co-operation of architects and they have petitioned the society to take action. By unanimous vote of a meeting of the Building Congress at which two hundred and fifty were present, a petition to this same general effect was signed by over three hundred general contractors, sub-contractors, and material dealers.

TRIED IN ACTUAL PRACTICE

"The proposed plan is based upon suggestions made by Professor Eric T. Huddelston of the Architectural Department of the University of New Hampshire, and a member of this Society, who has put such a plan into actual operation in building projects for the University. The industry is indebted to the University and Professor Huddelston for their thoughtful experimentations in this field of bidding practice where many subsequent difficulties find their inception."

That the plan is attracting nation-wide interest is attested by the inquiries that its sponsors have received from California, Michigan, Washington, D. C., New York, Illinois, Wisconsin and many other places. The subject is, of course, one which has interested the entire building industry for many years and which has been intensified by the present low construction level. A bill providing for the elimination of bid shopping by the general contractor on Federal Government work is now before Congress, and has been endorsed by the National Association of Master Plumbers and the Heating and Piping Contractors National Association as well as various state and local affiliates of these two national organizations.

INFORMATION FOR BIDDERS

The "Information to Bidders" and the "Proposal Plan," which are given below, show how the plan operates.

Proposal to receive consideration must be made in accordance with the following instructions:

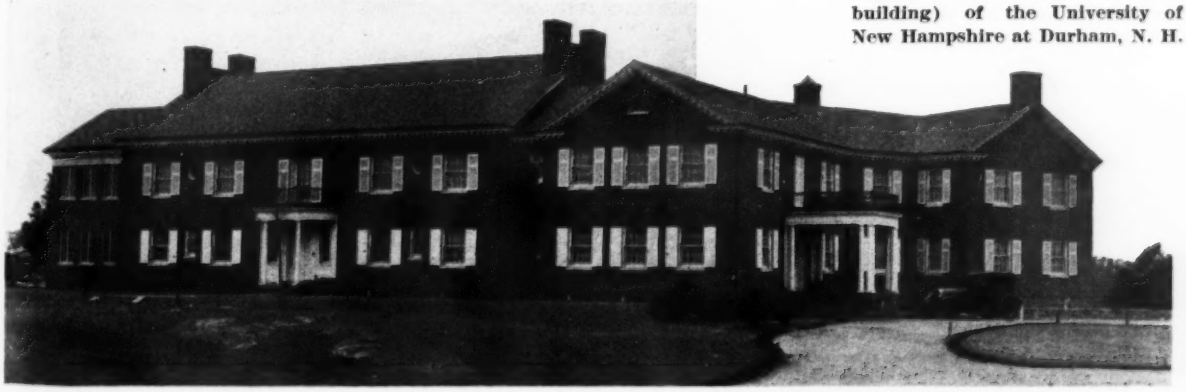
A. Bids shall be for the complete building, as follows:

(1) Each bid shall include all work under the general specifications, except such work as may be specifically excepted.

(2) Each bid shall be subdivided into two items:
Item One covering all the work of the general contractor, including all overhead and profits and all other work not embraced in the sub-contracts noted hereafter.
Item Two covering the work of sub-contracts, and the estimates therefor as listed in the architect's proposal form.

(3) Bids for any portions of the work to be executed as separate contracts, apart from the general contract, shall be submitted as may be provided for by the architect.

B. All sub-bidders, submitting estimates to general bidders, shall file a sealed copy of their bids and Performance Record with the Architect on or before .....(date and hour). No sub-bid will be considered in the final selection of sub-bidders, as



This is the first building which has been erected under the Huddleston plan. It is the Charles Harvey Hood House (Infirmary building) of the University of New Hampshire at Durham, N. H.

hereinafter described, except those filed with the architect as above provided.

C. The general contractor will be selected on the basis of the bids for the general work covered by Item One, entirely exclusive of the balance of the proposal as covered by Item Two. The standing and ability of the general bidders will be given due weight in addition to the amounts of the bids, and the owner reserves the right to reject any or all bids and to accept any bid as he deems is to his best interest.

D. After the selection of the general contractor as above provided, the architect and owner and general contractor shall jointly consider the names of proposed sub-bidders and their amounts, as given in the general contractor's proposal, and the other bids for such work on file with the architect, as provided above, and shall select from among the sub-bids so filed with the architect, the sub-bidders mutually agreed upon as being the most desirable for the work, with respect to their standing and ability as well as their amounts, and the list of sub-bidders and the amounts thereof as so agreed upon shall be included in the contract as the sub-contractors for the work indicated, and at the amounts named in their proposals as filed with the architect, the total contract price being adjusted accordingly.

The owner reserves the right to reject all sub-bids on any item or items provided the architect shall certify that none of such bids represents the bid of a person or firm competent to perform the work as specified, or that only one such bid was received and that he is not satisfied that the price is reasonable for acceptance without competition.

E. If a general bidder customarily performs with his own employes any sub-trade or trades, he may submit his own name and amount for such work in his own proposal. Such submission shall be considered on a par with sub-bids filed with the architect by regular sub-bidders for such work, and selection shall be made as provided above in *D*. No such sub-bid by a general bidder will be considered, however, unless the general bidder can show, to the satisfaction of the architect, that he does customarily perform such work, and is qualified to do the character of work required by the specifications.

F. If a general bidder is unable to secure any estimate on any listed sub-bidder's work, he shall for the purpose of the estimate enter the words "estimated cost" in place of the name of the sub-bidder, and state such amount as in his judgment is adequate. A sub-contractor for such work shall be selected as provided in *D* above.

G. All bids shall be on the forms supplied by the architect or on a form identical therewith, without change or addition thereto, and no bid not so submitted shall be given consideration. The owner authorizes the architect to state that he approves this statement and will enforce it strictly and will not consider any irregular proposal not submitted in the approved form.

H. The architect's notice to bidders shall designate the time and place for the submission of bids and other required information.

PROPOSAL FORM

(General Bidder)

To.....
.....

(a) The undersigned proposes to furnish all the labor and materials required for the construction of.....
.....on.....Street .....
(City) .....(State), for .....
(Owner) in accordance with the accompanying specifications and plans furnished by.....
(Architect) .....(Address), for the sum specified below subject to additions and deductions according to the specifications and in all respects according to the terms thereof.

(b) The undersigned agrees that if within..... days from the day named for delivering the proposal to the Architect (or Owner), notice that this proposal will be accepted by the owner shall be mailed to him at the business address given below, or shall be delivered to him, he will, within six week-days thereafter, deliver to the owner where directed a contract properly executed in triplicate (or otherwise) on the forms annexed, with such changes therein as shall have been made by the owner prior to the time named for delivery of this proposal (together with a bond of a surety company satisfactory to the owner in the sum of ——% of the contract price), (the premium for which is to be paid by the contractor and is included in the contract price.)

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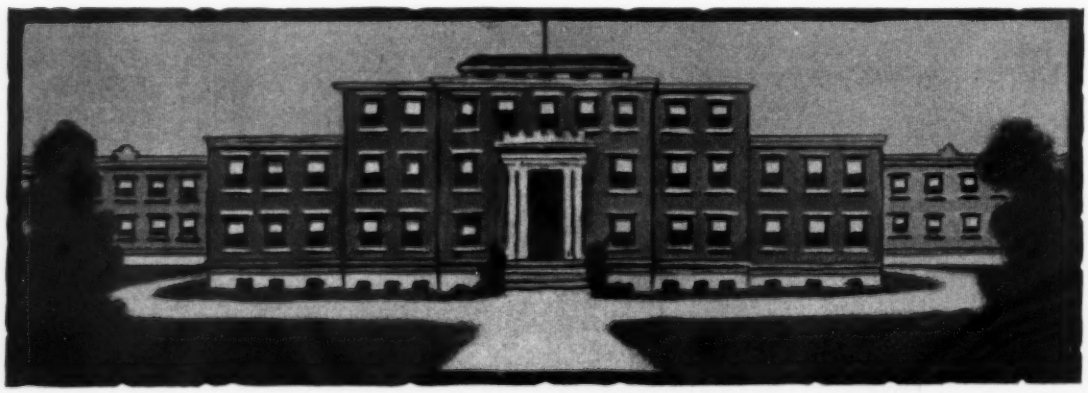


Fig. 1 — This view shows half-sprinklers installed along a sidewalk in one of Mr. Newman's jobs

Right now is the time to approach home owners on the idea of installing lawn sprinkler systems. The seasonal drought is being experienced and many of them will replant their lawns this fall. Get your work in before this is done. The past president of the California State Association of Merchant Plumbers tells TOM WHITE

How to Sell and Plan Lawn Sprinkler Jobs

IN THE past few years, H. G. Newman of Oakland, California, past president of the California State Association of Merchant Plumbers, has sold and installed many lawn sprinkling systems. From his experience he is of the opinion that this class of work properly belongs to the plumber. Considering that the work is usually performed for those who have reason to be proud of their grounds, efforts at selling such property owners are generally productive of more satisfactory results than when trying to sell the owner of a modest home.

Like many other activities falling within the scope of the man engaged in the plumbing and heating business, the installation of a lawn sprinkling system involves two kinds of work—first, selling the job, then planning and carrying it out. When completed and put in operation, this sort of work is quite unlike any other job with which the master plumber is concerned in that it is neither hidden away in an upstairs bathroom nor concealed in the basement. On the contrary, it is in full view of the public, and naturally possesses a definite advertising value. That is, it does if it functions properly. If not, then, of course, the planning is at fault. Clearly, a knowledge of pressures, pipe sizing and other engineering details has to be brought to bear on each job, no two of which are alike.

How does the master plumber set about to get lawn sprinkler work? Mr. Newman's experience has shown that the best time to go after this class of business is when closing the contract for plumbing and heating on a new residence, or even when doing modernizing or repair work on an old one. In short, the owner of any home with a fair sized lawn not sprinkler equipped is a prospect, and the best time to interest him is when other work is being considered.

Mr. Newman's sales arguments are based on two points: (1) the necessity for a sprinkling system that will insure the life and lasting beauty of a lawn, and (2) the time-saving factor. The modern home owner reasons, and rightly so, that he would not tolerate 1892 methods in his office, so why should he drag a hose over his grounds for an hour or so every night? Or, if he has a gardener or caretaker, why can't this man devote more time to other duties about the place by reason of the labor-saving lawn sprinkling system? At some of the larger homes, these systems have paid for themselves in relatively short time by reducing the number of gardeners.

For the purpose of practical illustration, one of Mr. Newman's more recent sprinkler installations will be described briefly. This is the I. E. Jones job at 1726 Oakland Avenue, in the city of Piedmont which adjoins Oakland. Following his customary practice, Mr. New-

Fig. 2—In relation to the plan in Fig. 4, this shows the sprinklers at the front of the house, marked section A

man had the job measured, laid out and made ready to install before a foot of pipe was delivered to the job. Thus a minimum of sod was disturbed. When the lawn was cut it was removed in squares. These squares of sod were laid on canvas. The following day the squares were replaced while the grass roots still retained their moisture. There being no freezing temperatures in the San Francisco Bay section, the system was buried only deep enough to permit of cultivation, or an average of about one foot below the surface.

The system is served by a 1¼-in. line going direct to its own separate meter. By this means the owner knows exactly how much it is costing him to operate his sprinkling system; also, an independent line insures uniform volume and pressure regardless of the demands for domestic purposes. Back of the meter is installed a strainer for removing foreign matter that might otherwise get through into the system and choke up the heads. The strainer is readily accessible, and its core is periodically removed for cleaning which can be done in a moment or two.

From the meter to the first connection the system is served by a 1½-in. line to the point where the supply for that part of the lawn designated as Section A is taken off. See Fig. 4. At this point 1¼-in. pipe is laid, the continuation of which supplies Section B as a 1-in. line. Section A carries one full-circle head, nine half-circle and two quarter-circle heads. From the point where the Section A supply is taken off, the line continues to Section B, as just noted, where there are ten half-circle and two quarter-circle heads. Going back to the start of Section A, the line continues as 1¼-in. to Section C, in the rear of the house, where there are five half-circle heads. Section D, likewise in the back yard, has ten half-circle heads.

One point in particular is stressed by Mr. Newman, and that is great care should be taken to lay out a sprinkler system so there will be not more than one low point in a small installation or in one section of a large one. By following this practice it will be impossible for any part of the line to become water-logged; in other words, there will be no one part of the lawn that is continually wet and mushy, which not only indicates poor workmanship, but is messy underfoot and renders the lawn more liable to being marred and scuffed up due to its continued softness.

Below there are listed a number of useful hints which Mr. Newman points out might well be noted by the master plumber who intends to follow up lawn sprinkling installation work.

(1) Do not overload the system by planning for a higher water pressure than is available during the season and at the time of day when sprinkling is to be done. Should it be likely that the water pressure may be lower than expected, divide the system into smaller sections.

(2) Having learned from the city water department of the number of pounds of dependable pressure that may be counted upon, select the full-circle sprinkler heads that can be used. Be sure that the head selected does not require a *higher* pressure than is available; that is, if the pressure is below 40 lb., select a head accordingly.

(3) When the size of sprinkler head has been determined, it is necessary only to select the head or combination of heads which best fits the shape and size of the lawn. Data showing what the various heads will supply and the proper distance for their spacing, of course, comes from the maker of the head.

(4) When it is desired to keep the walks dry, provision should be made for the use of half-circle heads *before* locating the full-circles in the remaining area of the lawn.

(5) Mark off a strip for the coverage of the half-circle heads. Then divide the remaining area into

Fig. 3—This view was taken looking southeast between the sprinklers of sections C and D

squares of equal size, which will depend upon the nozzle size of the sprinkler heads. These, in turn, will depend upon, first, the water pressure available, and second, the size and shape of the lawn.

(6) As the size of the water service is usually limited, it is seldom possible to operate an entire system at one time. Instead, the system must be divided into sections, the size of which is determined by the service available.

(7) The size of the water meter outlet indicates the size of the service. All connections between the meter and the system should be of *the next larger size* than the meter outlet. Where there is no meter, the size of the street connection indicates the size of the service, and the supply line from the street connection to the system should be, as indicated above, of the next size larger pipe than the street connection. The use of larger pipe for the supply line reduces loss of pressure from pipe friction and increases the efficiency of the entire system. This is especially important where the available pressure is low.

(8) It is well to have sprinkler heads between sidewalk and curbing in a separate unit, as the owner will often wish to sprinkle the parkway at a time when the balance of his lawn will not require it.

(9) Control valves should be placed as near the water meter as possible and yet be convenient. They should be located so that the operator will be out of range of the sprays when turning them on. A good plan is to group all valves at one point across the walk or driveway from the heads they control. Some owners require that the valves be placed in the basement.

Fig. 5—Here is another view of the sprinklers in section A. This shows mainly the full sprinklers in operation

Mr. Newman has learned that the installation of lawn sprinkler systems often provides the entering wedge for other and equally profitable work. In view of the exceptional advertising value possessed by an efficiently operating system, as was pointed out early in this article, it is frequently found that such an installation will stimulate inquiries from owners of neighboring property.

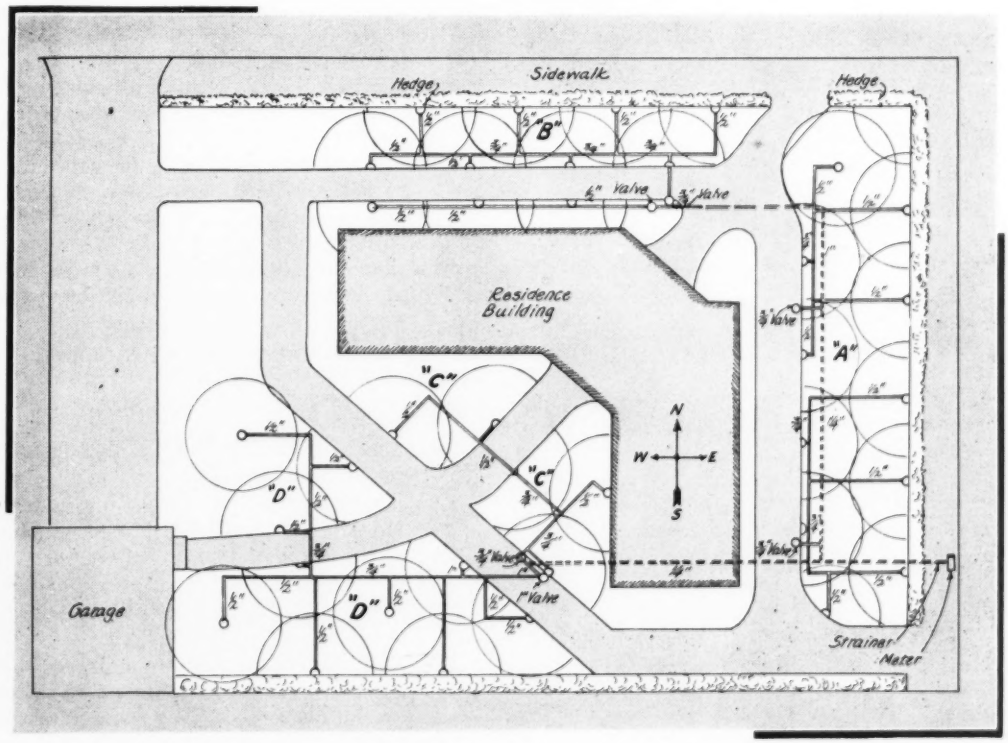


Fig. 4—This plan shows the complete layout of the job described. Note it is divided into sections for convenience

Fig. 1—Last year, a cooling installation was made in this home. It was operated all of this cooling season while continuous test data were recorded

How Dehumidification Brings Comfort in a Home Cooling Job

By WILLIAM W. STEVENS

LAST year, the Peoples Gas Light and Coke Company of Chicago installed and operated a cooling and dehumidifying job in a residence in that city. The work was in the nature of an experiment although it was done in a home in which the owners lived and dictated demands for comfort. Test data was obtained during the operation last year, and this year again it was used to make the occupants comfortable while the representatives of the gas company collected additional data.

Further this year, the same company installed and is now operating a second cooling and dehumidifying job in another section of Chicago. While this is similar to the first installation, it contains a number of changes which were worked out as a result of the past experience gained. In this article, we are interested, primarily, in the second installation which was made this year, although points of similarity and difference between both jobs will be touched on.

The purpose of the equipment installed is to provide comfort. The American Society of Heating and Ventilating Engineers psychrometric chart points out that at 82 deg. Fahr. and 10 per cent relative humidity you are just as comfortable as at 72 deg. Fahr. and 90 per cent relative humidity. In other words, you may be comfortable when the humidity is correct even if the temperature is high. This may be stated in still another way. If the outside air at 72 deg. Fahr. and 90 per cent relative humidity is taken into a building and conditioned so that it has a relative humidity of only 10 per cent—keeping the temperature constant—this conditioned air is just as comfortable to live in as it would be if the actual dry bulb temperature were reduced to approximately 65 deg. Fahr. without dehumidification. Yet, no actual cooling of the air was done. The effect of taking moisture out of the air thus is clearly illustrated as far as physical comfort is concerned. The major operation of the equipment which was installed in the job under discussion is to take moisture out of the air. In addition, the equipment effects actual cooling by circulating the air over water-cooled coils, and on other occasions by drawing into the system cool night air to displace the air heated during the hot part of the day.

COOLING FACILITIES ARE LISTED

These cooling facilities are listed in the following outline to give a general idea as to what is involved:

A. Dehumidification
   1. By adsorption
      a. Using beds of adsorptive materials

B. Actual cooling
   1. By cold water
      a. With cooling unit in the basement duct-work
         1a. Using cooling coils
   2. By circulating cool outside air
      a. Using blower in basement to draw in cool outside air

This is the second of our series of articles in answer to the question "What does air conditioning include?" In the August issue, the complete design, installation and operation features of a home cooling job using ice were described. Here, an installation is considered to show what is being done to make homes comfortable by means of dehumidification with an adsorbent material and cooling with water taken from lake.

The home selected for this installation is located on the south side of Chicago. It is a two-story residence with finished rooms in the attic. The volume has been computed as being 23,100 cu. ft. The walls are of brick, 12 in. thick, with ½-in. of plaster on wood lath and furring. Reference tables show the coefficient of transmission of this type of construction to be 0.208. Stated differently, this wall transmits 0.208 Btu. per hour through each square foot of wall area for each Fahrenheit degree difference in outside and inside air temperatures, with a wind exposure of 15 miles per hour. The roof of the building is insulated with 4 in. of a fill type insulation and the sloping outside walls of the attic or third story are insulated with 8 in. of the same type of material. It was estimated that the heat loss from the building on a zero to 70 deg. Fahr. basis amounted to 122,400 Btu.

BUILDING CONTAINS TEN ROOMS

The building contains a total of ten rooms and two baths. One bath is located on the third floor and the other on the second floor. There are only three rooms on the first floor, but these are very large ones.

With this information, a main circulation blower was installed having a capacity of 2,900 cu. ft. per minute, or 174,000 cu. ft. per hour. Dividing this capacity by the cubic contents of the house gives 168,000 divided by 23,100, which equals approximately 7½ complete air changes per hour. A 1½ hp. motor is used for driving the blower at a speed of 600 r.p.m. The dehumidifying equipment selected has a rated capacity of 800 cu. ft. of air per minute. In this regard, it should be noted that only a portion of the air passes through the dehumidifying equipment, namely, 27.5 per cent. This air is dehumidified to a point unsuited for comfort and then is mixed with the regular air, with the result that it takes on moisture and the whole is brought to the desired humidity.

The main cooling unit consists of four sets of cooling coils located in the duct-work beyond the blower and the filter. Five gallons of tap water is circulated through these coils per minute.

All of the heating and cooling equipment is located in a basement room by itself. The space occupied is surprisingly small, considering what is accomplished.

As for the operation of the different pieces of equipment and their relation to each other, this will be taken up in the following. Reference should be made to Fig. 5. This shows a plan view of the entire job. Before cooling provisions were installed, the equipment consisted of the heating unit and the twelve leaders serving the ten upstairs rooms and two bathrooms, indicated on the plan by the wording "Distributing duct-work to upstairs." Also, there was a blower which made the job forced. This was removed and the new main blower "A" was installed. Return air is taken down the vertical duct marked "Main return" from a stair hall which rises the full three stories. Thus air from the entire house is collected at this single point.

CIRCUITS ARE DESCRIBED

This return air is drawn into the main blower "A" and is forced through a treated glass filter, thence over cooling coils and on into the distributing duct-work, where it is directed to the various rooms, and back to the main return. It is interesting to note here that the blower is isolated from the duct-work by canvas con-

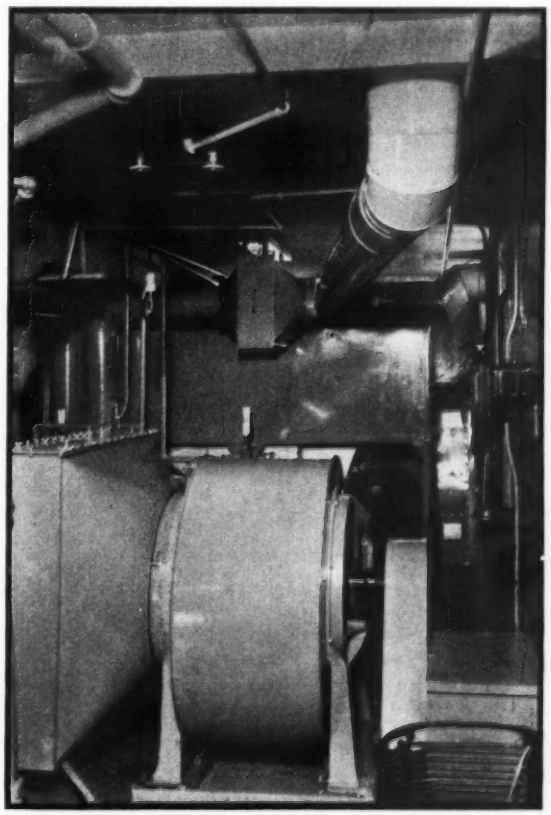


Fig. 2—Here is one part of the cooling equipment which was installed in last year's job. The two dehumidifying beds are shown in the background of the photograph

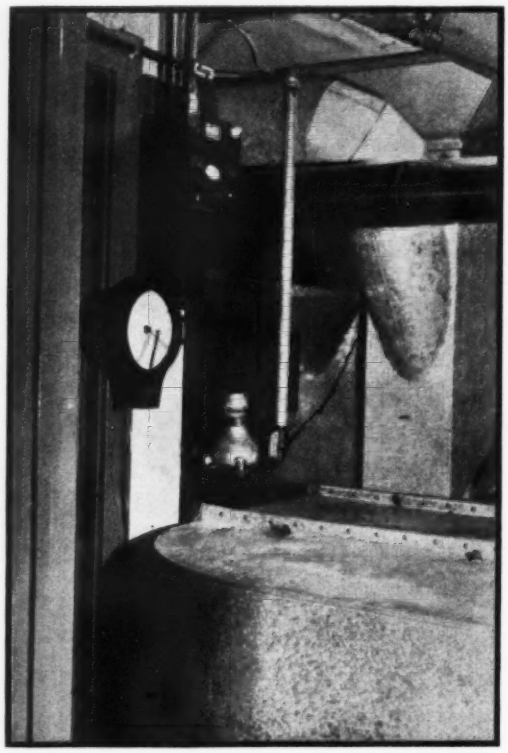
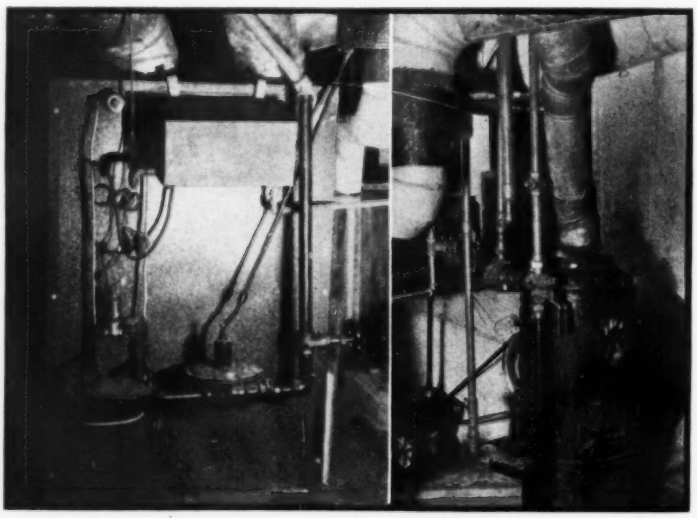


Fig. 3—The views on these two pages show this year's installation. The dehumidifying unit is enclosed in the cabinet at the left

nections by way of eliminating sounds. From this it will be seen that so far the installation is merely a forced air job with a filter and a set of cooling coils. Incidentally, the filter is of the renewable type. The section is discarded when dirty. Cooling by means of the coils may be effected when desired by running water through them.

Fig. 4 — These adjoining views show first the gas-fired heating equipment which was in place when the cooling facilities were installed, thus providing ducts to the several rooms and second, the cooling and dehumidifying equipment



Out of the main return air duct, and above the suction connection to the main blower, there is a lead taken off which runs to the dehumidifying unit. On the way it joins with a duct which runs out-of-doors. The plan shows these runs and also two dampers; one in the lead from out-of-doors and the other in the lead from the main return. These combined ducts lead to blower "C," which forces the raw air through the dehumidifying unit through the after cooler and thence into the bottom of the main return duct below the suction connection of the main blower. Thus it will be seen that another complete circuit of the system is outlined. It should be noted that for this circuit the air is taken from the main return above the main blower "A" connection and is delivered in a dehumidified state back to the main return below the above mentioned connection. With the damper arrangement, all of the air which is dehumidified may be taken from the main return so as to operate as a complete recirculation job. On the other hand, the dampers may be arranged so that all of the air to be dehumidified may be taken from the out-of-doors duct, and none from the upstairs. As a third possibility, the dampers may be adjusted so that both outside air and upstairs air may be dehumidified.

The third circuit takes air from the basement through a small and special gas heater. This air is heated and combines with the products of combustion. All of it is carried to the dehumidifying beds, where it is passed through the adsorbent material to reactivate it. From here it goes through blower "B" and is exhausted through a duct and out of the chimney.

JOB JUST PLACED IN OPERATION

This job just recently has been placed in operation. Complete data on its performance has not been obtained. It was found on this occasion that the outside air contained about 120 grains of moisture per lb. of dry air. This was taken into the system and was dehumidified to a content of only 29 grains of moisture; then mixed with the return air and delivered to the house. The moisture content inside the house then was 77 grains per lb. of dry air. The outside temperature was 92 deg. Fahr. and the inside temperature on the first floor was cooled to 80 deg. Fahr. by means of the water coils. Reference to a psychrometric chart indicates that with air at 92 deg. Fahr. and containing 120 grains of moisture per pound of dry air, the relative humidity is 55 per cent. Likewise, with air at 80 deg. Fahr. inside having 77 grains of moisture, the relative humidity is 50 per cent. Although the system had just been placed in operation these test runs covered several humid days. At this same time the temperature on the second floor was 81 deg. Fahr. and on the third floor 83 deg. Fahr. It

should be recalled that one pound is equivalent to 7,000 grains, or 437.5 grains equal one ounce. Therefore, the outside air in the foregoing test contained 120 divided by 437.5, or approximately ¼ ounce of moisture in each pound of dry air. It might be interesting, further, to note that at 92 deg. Fahr. the outside air was able to hold 222 grains of moisture, or not quite twice as much as it already contained.

Expressed in another way, the dehumidifier removed 74 per cent of the moisture from the outside air.

Then the dampers were changed and only inside air was recirculated through the system. The return air contained 85 grains of moisture per pound of dry air. This amount was reduced to 15 grains of moisture, or 82 per cent of the moisture was removed in this operation. In terms of relative humidity, with the inside air at 80 deg. Fahr., the return had a relative humidity of 55 per cent, while the supply had a relative humidity of approximately 12 per cent, thus again bringing conditions within the zone of comfort. The supply is a mixture of 27½ per cent dehumidified air of 15 gr. moisture content and 72½ per cent of return air.

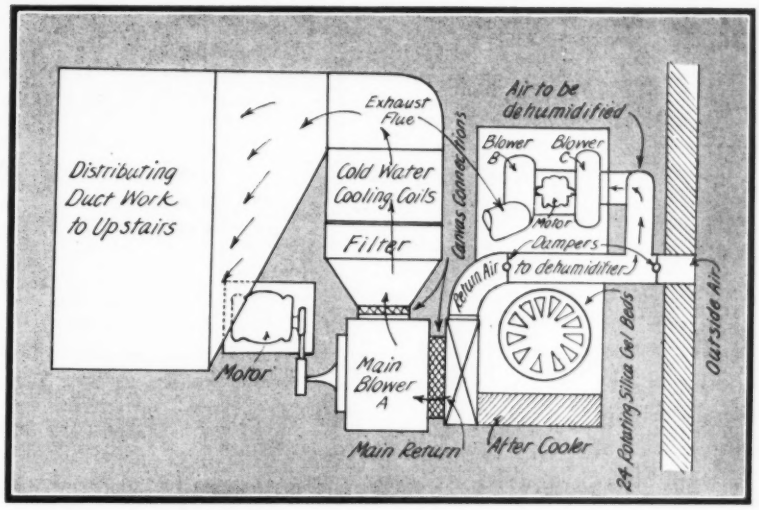


Fig. 5—This plan shows how all of the equipment was installed in relation to the existing heating plant located at the left. The photographs should be viewed in relation to this plan in order to be understood

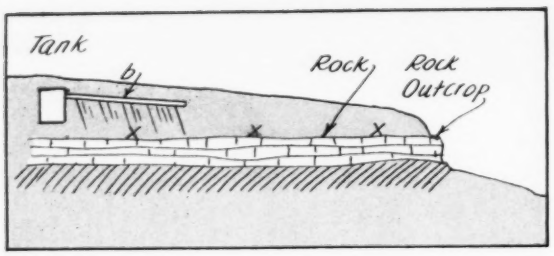
Another interesting feature of the installation is the operation of the dehumidifier. The entire unit is enclosed in a metal cabinet. This is indicated by the sketch marked Fig. 5. Dehumidification is accomplished by silica gel, which is an adsorbent material. Air is passed through beds of this, and when contact is made the moisture is taken up. In this unit the beds are contained in a drum. The axis is vertical and the drum revolves about it. This drum is divided into vertical compartments which are cylindrical sectors. Each compartment forms a dehumidifying bed. In all, there are twenty-four of these. Air to be dehumidified is passed through twelve of them at one time. At the same time, nine of the beds are being reactivated. In other words, hot gases from the gas fired heater are being forced through these nine beds to remove the moisture which the beds removed from the air. The remaining three of the twenty-four beds, during this same time, are purged of the hot gases by having basement air drawn through them. This air is exhausted through the chimney.

THE DEHUMIDIFICATION UNIT

The top and bottom heads of this revolving drum are arranged so as to be stationary. They contain the several outlets and inlets. From this it will be seen that a bed first is between the inlet and outlet, which permits hot gases to pass through it. Then it revolves to where it is purged after being thoroughly reactivated. Finally it passes to the openings in the heads which cause the upstairs air to be forced through it for dehumidification. The heated gases passing through the beds for reactivation are at a temperature of 300 deg. Fahr. This, of course, heats the beds so that the room air, during the dehumidification part of the cycle, leaves at a temperature of 160 deg. Fahr. To reduce this, the air is forced through what is called an

(Continued on Page 126)

Fig. 6—This view was taken adjacent to the one shown in Fig. 3. The original heating equipment is seen at the right with the new cooling equipment connection



The Location of Disposal Areas

The questionnaire on the next page shows what a selected group of engineers has found through experience, in regard to the causes of difficulties in rural sanitation jobs. This should not be interpreted as indicating that such jobs are particularly susceptible to trouble. It merely points out where trouble has occurred and by studying the items, it will be noted that lack of information or some installation oversight has been the direct cause. The first figure in each column of percentages refers to replies from Long Island, New York, and the second, from engineers with experience in Northern New England.

By W. A. HARDENBERGH

RECENTLY, questionnaires were sent to a selected group of state, county and city sanitary engineers located in Northern New England and Long Island, men with wide experience in the installation of septic tanks. The replies received covered many factors having to do with the basic causes of trouble in the location, design and installation of rural sanitation jobs. The first question asked was: "What is the most common cause of trouble?"

The replies showed that the greatest single cause of trouble, according to the experience of these engineers, has been the improper location of the installation. A weighted average of the replies, showed that 53 per cent of all troubles are due to a greater or less extent to this factor, and 33 per cent to improper installation.

EXAMINATION OF SITE FOR SYSTEM

Data following are based primarily upon the experience of the writer.

In the examination of the site, a careful survey of the entire area available for the installation should be the first step, viewing it in relation to such factors as cost of installation and trouble-free operation afterwards. When making this examination, it is of considerable advantage to have at hand data in regard to the comparative elevations of the area, so that the available slope or fall to any point can be determined. If no precise survey of the plot has been made, a small level (hand or carpenter's) is of great assistance. In making this examination, consider the following factors: Topography, that is the contour of the land; surface conditions, including the type of soil, drainage, surface wash, and rock; and subsurface conditions, such as rock, hardpan, ground water and underlying soil strata. The size of the plot has often a determining effect upon location and should be considered in relation to these factors.

CONDITIONS TO BE OBSERVED

Topography. It is always better to keep the installation as high on the slope of a hill, ridge or knoll as possible, avoiding low areas, since ground water and surface drainage are more likely to interfere with the operation of the system. (Fig. 1). Avoid also areas overlying rock formations, since rock greatly increases both the cost of the installation and the probability of future trouble. Frequently the effluent follows the rock to an outcrop and thus may cause a nuisance.

Subsoil Conditions. Where there is tight clay or hardpan, the initial cost of construction is increased, more disposal field area is necessary, and the entire job must be done more carefully. Much information regarding subsoil conditions can be gained while examining the site. A little work with a pick and shovel or an earth auger will yield additional first hand information, frequently worth many times its cost. If this subsurface examination can be made during a wet period, probably maximum information will be obtained.

Rock and hardpan are always factors of potential trouble. The presence of the former often can be determined by the visible outcrops, and its probable location charted. In the case of hardpan, some digging, supplemented by information from local residents, should give all necessary data. If there are open wells nearby, they may indicate the depth to ground water and give some information regarding subsoil conditions.

Springs and seep areas should be studied carefully. The former give information relative to ground water conditions, but more pointedly indicate areas to be avoided because of danger of pollution. The amount and continuity of flow from seep areas may be a good indication of the amount of water held in the ground or finding its way to the area under consideration. Consider this flow in relation to the season and the climate when investigated. The character of the vegetation may indicate whether areas are wet permanently or only occasionally.

Fig. 1—At the top of this page is shown a cross section of soil conditions. The seepage from disposal lines "b" will follow the rock surface marked "x" to the outcrop and will cause a nuisance if the distance "b" to "x" is less than about 5 ft. in average soils

Septic Tanks and for Rural Jobs

Surface Drainage. The tank and disposal lines should be located away from a probable wash from surface drainage. Where this cannot be avoided, trenches or drains should be constructed to carry away surface water. All back-fill in trenches covering disposal lines subject to surface wash should be thoroughly compacted —not by puddling, but by tamping in 4-in. or 6-in. layers, being careful not to injure the disposal lines. The cover should be rounded above the ground surface so as to deflect surface drainage. It is better to avoid a location exposed to surface wash, but where it cannot be avoided, the above preventives will minimize the damage probable.

Do not place the tank or any portion of the disposal line where it will be affected by drip from eaves, the run-off from roofs, or the wash from paved areas.

WHEN A FILL IS MADE

Surface Conditions. It is most desirable to avoid driveways, soils that have been compacted, and areas that appear to retain moisture for an undue period after a rain. Fills or made ground normally provide good disposal areas, unless the soil has been placed and compacted in layers, in which case the seepage from the disposal line may follow between these layers and appear at the face of the fill. Also, unless the fill has settled thoroughly, further settlement may occur and cause the dislocation or breaking of the tile line or of the connection between the tank and the disposal field.

Sometimes a fill is to be made, and the disposal system can be constructed at or near the natural ground surface, and then covered over. Unless the ground surface is plowed or thoroughly scarified, the seepage will follow the plane between the old and the new soil to the face of the fill, with very slight purification. This will cause a nuisance.

Old refuse dumps sometimes may be used, especially for industrial installations. Each is a case for individual study. Digging is usually very difficult, as is laying the tile to a true grade. Also, further settlement is likely to continue.

Conditions which facilitate laying out the disposal line in runs at least 50 feet in length, with the proper grade, are most desirable. Where two or more lines are to be laid, there should be sufficient room to allow a spacing of at least 6 ft. on centers, with both lines preferably on the same level.

Many plumbing codes and city ordinances specify that tanks and disposal areas should be located at least 5 ft. from property or building lines. This should be investigated for each locality. In most states, the tank or the disposal system is required to be placed at least a specified distance, from a well, spring or other source of water supply. Generally the distance specified is 50 to 100 ft.

How Septic Tank Troubles Occur

I. Which of the following is the most common cause of trouble?

20%-20% A. Improper or incorrect installation.
20%-65% B. Improper location of tank and disposal area.
60%-15% C. Attempted use under conditions where a small septic tank can not ordinarily be expected to work.

II. Which of these do you find to be the most common source of trouble?

The disposal area 75%-80%. The septic tank 24%-15%. The house sewer 1%-5%.

III. Which of the following items do you find most often cause trouble?

In tile subsurface fields:

75%-50%. 1. Inadequate size or area.
4%-15% 2. Too much fall or slope in tile line.
10%-15% 3. Not enough porous material around tile.
5% 4. In or too near ground water.
5%-10% 5. Unfavorable soil conditions.
6%- 5% 6. Other causes (please specify when possible).

In leaching Cesspools:			*In septic tanks:*		
50%-20%	1.	Inadequate size.	50%-80%	1.	Too small.
20%	2.	Reach into ground water.	25%	2.	Too shallow.
25%-50%	3.	Unfavorable soil conditions.	20%- 5%	3.	Too large.
25%-10%	4.	Inferior construction.	5%	4.	Use of battery of tanks.
	5.	Other causes.	10%	5.	Improper baffling.
			5%	6.	Improper Inlets & outlets.
				7.	Other causes.

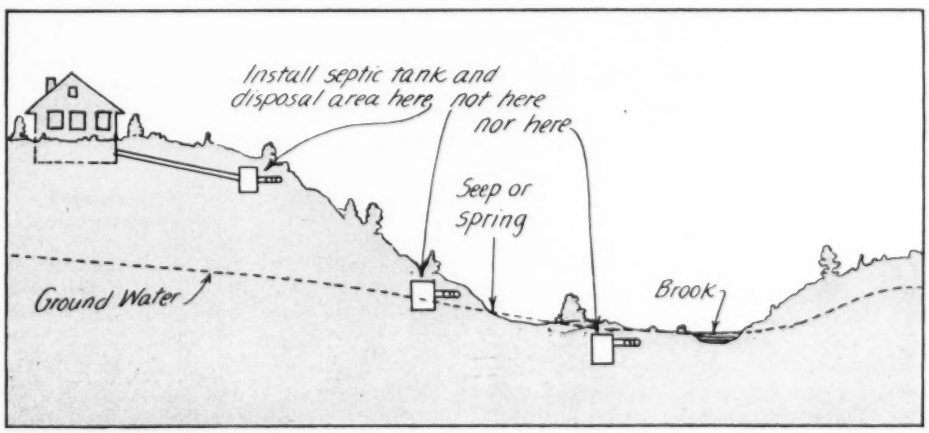


Fig. 2—This cross section of soil and ground water conditions shows why the septic tank and disposal area should be located on high land

Fig. 1—"A person traveling through the state of Maine may stop at any eating or lodging place and be absolutely sure that the water he drinks is pure." A comfort station for one of the camps is shown at the left

By S. M. BARR

How Tourist Camp Sanitation is Regulated in Maine

The State Plumbing Code Governs In Roadside Installations

THERE may be states which equal or excel the State of Maine in the excellence and efficiency of its sanitary regulation and supervision of its overnight camps, recreational camps, hunting and fishing camps, tourists' homes and road-side stands, but out of our own personal knowledge and experience we have found that this particular state stands high.

Back in 1925 the Maine State Bureau of Health first obtained an adequate appropriation for the effective handling of this problem, and from that time this phase of its work has gone ahead with great rapidity.

There are now twelve state inspectors who devote their entire time during the summer months to this work. The extent of it may be seen from the fact that in the season of 1931 over 6,000 inspections were made.

Naturally the biggest problem that has had to be faced is that of a pure water supply.

In 1927 a law was passed requiring the licensing of all these places, and a condition governing such licensing was proof of a pure water supply.

During 1927 2,200 licenses were issued, 1,770 showing separate water supplies, such as wells, springs, lakes and brooks. Practically 11 per cent of these separate supplies were found to be unsafe.

Each succeeding year has shown a lower percentage of condemned water supplies, until in 1931 it had dropped to less than 5 per cent.

In all cases where the water supply was proved to be unsafe, its use has been prohibited and the owners have been obliged to remedy the difficulty.

The old well-sweep, the old wooden bucket, chain pumps, etc., have been done away with, and replaced with properly protected wells and springs, with pumping equipment properly installed, or by gravity lines equipped with faucets. These changes have put an end to all dipping of water by hand, which was a serious cause of contamination.

Very often indeed, wells and springs have been found located too close to privies, stables, cesspools, sink drains, etc. Such sources of water supply have been filled up and entirely abandoned, and new sources of supply obtained which were known to be safe.

When it has been impossible to remove the cause of pollution, the supply has had to be permanently abandoned and a new safe supply obtained, no matter what the cost or inconvenience.

REGULATIONS PROVIDE PUBLIC SAFETY

As a result of all this work, it is safe to say that a person traveling through the state of Maine may stop at any eating or lodging place, and be absolutely sure that the water he drinks is pure.

The State Bureau of Health has not confined its attention solely to the securing of safe water supplies. It has applied its efforts also to the enforcing of correct

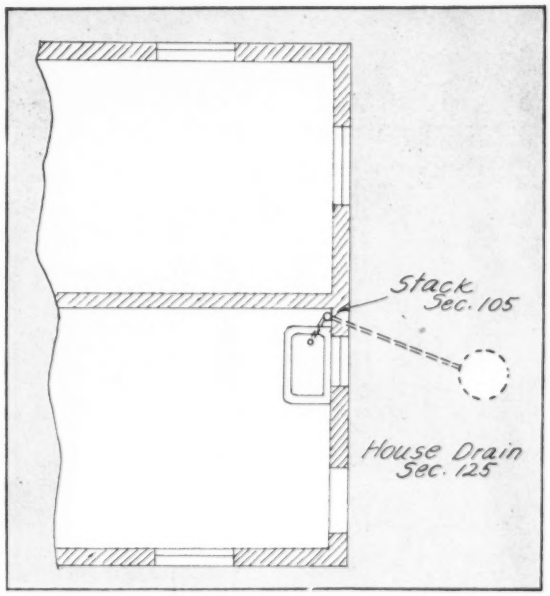


Fig. 3—This shows the plan of the sink installation illustrated in Fig. 2

requirements in sanitary plumbing practice.

Maine is one of the states which has enacted a state plumbing code, and is endeavoring to enforce it. This code is the Hoover code with a few slight modifications.

Apparently the plan of the Maine State Bureau of Health, in the case of new plumbing installations going into camps, roadside stands, etc., is to insist on the installing of this work in accordance with the state plumbing regulations.

When the permit is issued for such work, two standard blue print plumbing layouts are put into the owner's hands, and he must see that the plumbing is installed in accordance with the requirements indicated. This is an important matter, for hundreds of the overnight camps in Maine are provided with excellent plumbing. Such plumbing is in general of two kinds.

FIXTURES IN BETTER CAMPS

In a great many of the better camps, each cabin is provided with its own water closet and lavatory, the two fixtures often being augmented by a shower bath, and in some cases by a tub.

In some camps only a few of the cabins will have the full equipment described above, while others will have only a lavatory. In such cases there will be toilet rooms for the two sexes, for general camp use.

The second general type of camp plumbing is that in which each cabin has a lavatory, with one or more general toilet houses providing water closets and shower baths. Such a camp toilet is seen in Fig. 1. In some of the larger camps one of these general toilet rooms or houses will be provided for groups or definite rows of cabins.

Recognizing these two types of installation, the state in its two blueprint layouts, has covered each of them. They are shown in Figs. 2 to 5.

Fig. 2 shows the general requirements where only a sink or lavatory is installed. Fig. 3 shows a typical floor plan for the layout.

Figs. 4 and 5 cover a typical layout for sink or lavatory and water closet.

Each of the elevations shown in Figs. 2 and 4 bear references to sections to be formed in the state plumbing code. These references are an important feature of these official layouts. The reference to Sec. 125 for instance, is the following important regulation:

125. Material. (a) The house sewer beginning eight (8) feet outside the building shall be of cast-iron or of vitrified clay pipe; (b) the house drain when underground shall be of lead, brass, or cast-iron; (c) the house drain when

(Continued on Page 90)

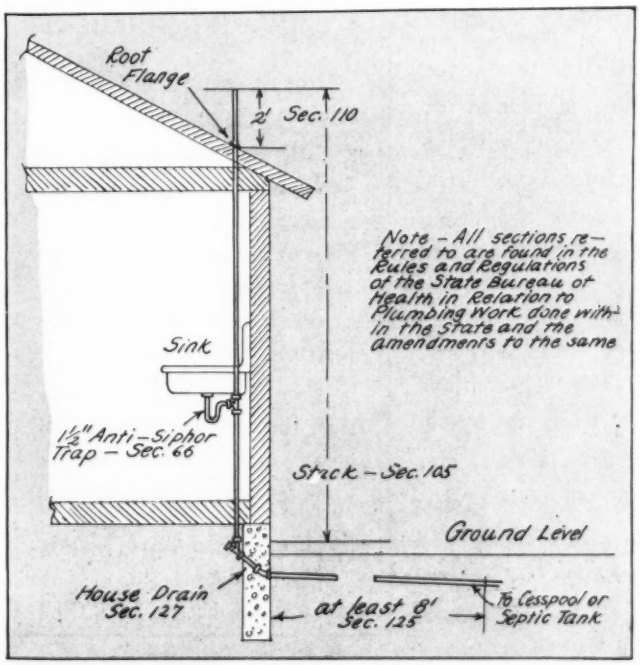

Roof Flange
2' Sec. 110
Note - All sections referred to are found in the Rules and Regulations of the State Bureau of Health in Relation to Plumbing Work done within the State and the amendments to the same
Sink
1½" Anti-Siphon Trap - Sec. 66
Stack - Sec. 105
Ground Level
House Drain Sec. 127
at least 8' Sec. 125
To Cesspool or Septic Tank

Fig. 2—Here is a model plumbing installation for a sink only. It is what is specified in the plumbing regulations of the state of Maine and applies to tourist camps as well as other buildings

When Did You Last Visit a Plumbing Store?

YOU are completely informed as to the changes in furniture fashions. You will be surprised, if you have not visited a plumbing store in the last several years, to see how plumbing furnishings have kept pace with the modern ideas in home decoration.

New designs, lines that are modern, matched fixtures in charming ensembles, shining fittings with lines as daring as those in modern architecture—all this you will find here.

When will you come in for a visit? Any time—there's always someone here to serve you.

(In this space Your Name, Etc.)

A single-column plumbing ad

NOT PLUMBING FIXTURES —PLUMBING FURNISHINGS

"It isn't that I've gone 'arty' or anything of the kind," explains Harry Brown, local plumbing contractor, "that I'd like to hear more talk about plumbing furnishings and less about fixtures. The point is that modern design in plumbing fixtures—I mean furnishings—has stepped right along with design in architecture and furniture. For that reason, I can talk about a 'suite of fixtures' right along with the furniture man, because the way they've matched these fixtures and their fittings, when you have them assembled you have a group of furnishings that deserve admiration. I look around my display room, sometimes, and I'm perfectly willing to believe that I have a right to call it 'Ye Olde Plumbing Shoppe'."

Hand this publicity item to your newspaper

My dear Madam:

"I had no idea" are the words I hear most frequently from people who have not, for several years, been in an up-to-date plumbing store.

And it's generally true-- people have no idea of the advances in plumbing fashions. Few know that designers of plumbing for kitchen and bathroom have gone as far afield for designs as have designers of furtniture or the creators of our modern architecture. It is no exaggeration to say that you can find plumbing fixtures which will blend in with the most extreme Egyptian scheme of decoration, or the simplest, most severe Colonial setting.

If you haven't visited this, or another modern plumbing store for some time, let me urge that you do so. I am sure that you, too, will be surprised at the thoroughness with which plumbing designs have been worked out, so that from the fittings to the fixtures, there is that smartness of line which we demand in other furnishings, but which we have overlooked sometimes when thinking about plumbing fixtures.

I can truthfully say that I know of no other products, primarily for utilitarian purposes, where their usefulness and their beauty have been so skilfully blended.

If you want to telephone before coming in, I'll be very glad to be here at any time that will suit your convenience. It will be a pleasure to show you the great advancement in fixture design.

Very truly yours,
HARRY BROWN

A plumbing sales letter

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING —without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve —six months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

New Designs in Plumbing Fixtures

Designers of plumbing fixtures have taken their inspiration from many sources.

Today a set of "matched" fixtures, with the appropriate fittings in glistening metal, gives beauty to the bathroom or kitchen, without in the least sacrificing utility.

If you haven't visited our store for some time, you'll be greatly interested in seeing some of these new designs.

(In this space Your Name, etc.)

A single-column plumbing ad

SERVICE

My dear Madam:

We are beginning to get, in the early mornings, a hint of the colder weather that is approaching. It strikes me, therefore, as an appropriate time to call your attention to possible heating needs.

Think for a moment. During last winter, was your house satisfactorily heated? Did you have a room that would never become thoroughly comfortable? Did you have a feeling that the heating plant was requiring too much attention, or burning too much fuel? Certainly if you had any major difficulties you will remember them.

Before you are actually called upon to start the heating plant, we urge that these things, whether large or small, be taken care of. A heating plant is, after all, a piece of mechanical equipment. There is a reason for every difficulty which may develop. We have done a great deal of "trouble shooting" in our day and we have learned how to correct most of these troubles with a minimum of time and, of course, a minimum of expense to you.

If you would like to have your heating plant made completely automatic for next winter, I'll be glad to talk it over with you, tell you what can be done and what it will cost, and then you can still take a little time to think about the matter.

At any rate, for any heating service, just telephone. We'll send a competent man.

Very truly yours,

HARRY BROWN

A heating sales letter

OLD MAN WINTER'S AROUND THE CORNER

"Winter and prosperity, it would seem, are coming back together," says Harry Brown, local heating contractor. "And they'll come in pretty much the same way—without much advance fuss. We'll wake up one morning and discover that they've been hanging around.

"I don't need to talk about preparedness for prosperity, of course; but I do think it's worth while to talk about winter and its coming right now. Because a lot of folks have forgotten all summer the heating plant troubles they had last winter. I don't want them to remember them when it's too late and winter is with them again. Now's the time to correct them."

A piece of heating publicity

Heating Troubles Can Be Eliminated Now

And they should be eliminated now, before Old Winter takes a fall out of the heating plant. If you can remember any slightest difficulty with your heating plant last winter, we urge that you take care of it now. Otherwise, when you start the plant you are apt to find that it's a bigger trouble than you thought it was. Just telephone.

(In this space Your Name, Etc.)

For newspaper ad or blotter copy on heating

Winter and Heating Needs — Just Around the Corner

AND he's drawing closer every day. Before very long he will be visiting us steadily, like an unwelcome relative.

Prepare for that visit now, by putting the heating plant in shape to take care of the demands of the colder weather. We'll inspect your heating plant; or, if you remember that you were having one kind of difficulty or another last winter, be sure to have us trace the cause now, before it's too late.

A telephone call will bring a competent man for an inspection, or to make the necessary adjustments.

(In this space Your Name, etc.)

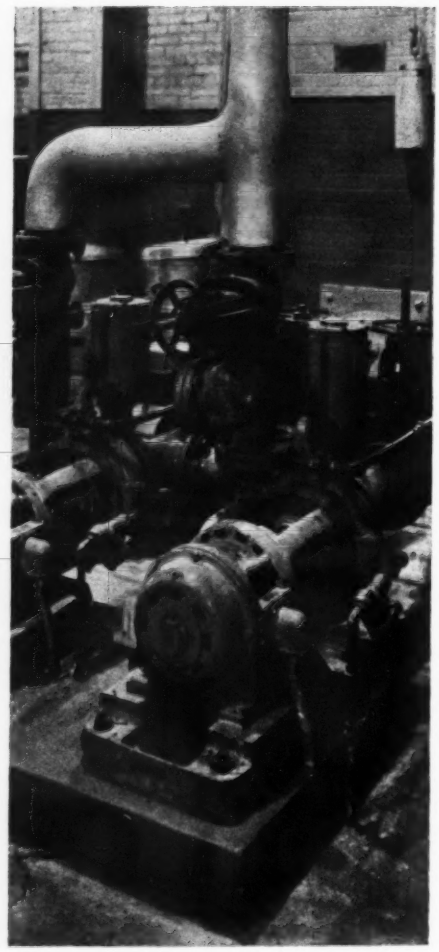
A single-column heating ad

Note how the copy on each of these two pages dovetails. The ad copy, the sales letter, the publicity item—in each case they help each other. Use them in your efforts—and send us copies.

Survey Shows How Drainage Practices Vary

Plumbing Codes Are Compared in Composite Illustration

By R. M. STARBUCK



The two pumps shown above are located in a basement below the sewer level. They lift sewage from a sump so that it can flow into the main line by gravity

THERE is nothing like having a picture of a thing right in front of one. It is a well known fact that seeing a thing with the eye leaves a stronger and more lasting mental impression than hearing about it. At a glance one may take in from a picture an understanding of the subject involved that perhaps could not be so well and so quickly covered in any other way. This is the reason why pilot drawings are coming so much into favor. At a glance they disclose what might take a long time to figure out from a code.

Some time ago we studied types of venting graphically —that is, from an explanatory picture covering the entire subject. Now we want to do the same thing in connection with the subject of drainage. Our idea is to cover in the one drawing or chart, various terms used and practices employed.

Some of the information conveyed may be quite rudimentary to some. However, from an experience that covers plumbing practice in every corner of the country, we know that there is a difference in opinion and more or less misunderstanding and confusion concerning plumbing practices and plumbing terms that such an article as this may help to overcome.

A study of plumbing practices followed in various cities, many of which will be found in this plumbing chart or guide that we are now studying, will show the student that it is not so much in principle as in detail that one modern plumbing code differs from another.

We know of no better method of explaining our thought in this matter than to discuss three different practices relating to the use of cleanouts, all of which are to be found in our drawing.

For instance, most of us will agree that a cleanout is a good thing close to the point where the house drain passes through the foundation wall, also at the end of the house drain, and if this line is long enough, at certain intervals apart on the horizontal run. What is the correct distance apart for cleanouts on the house drain?

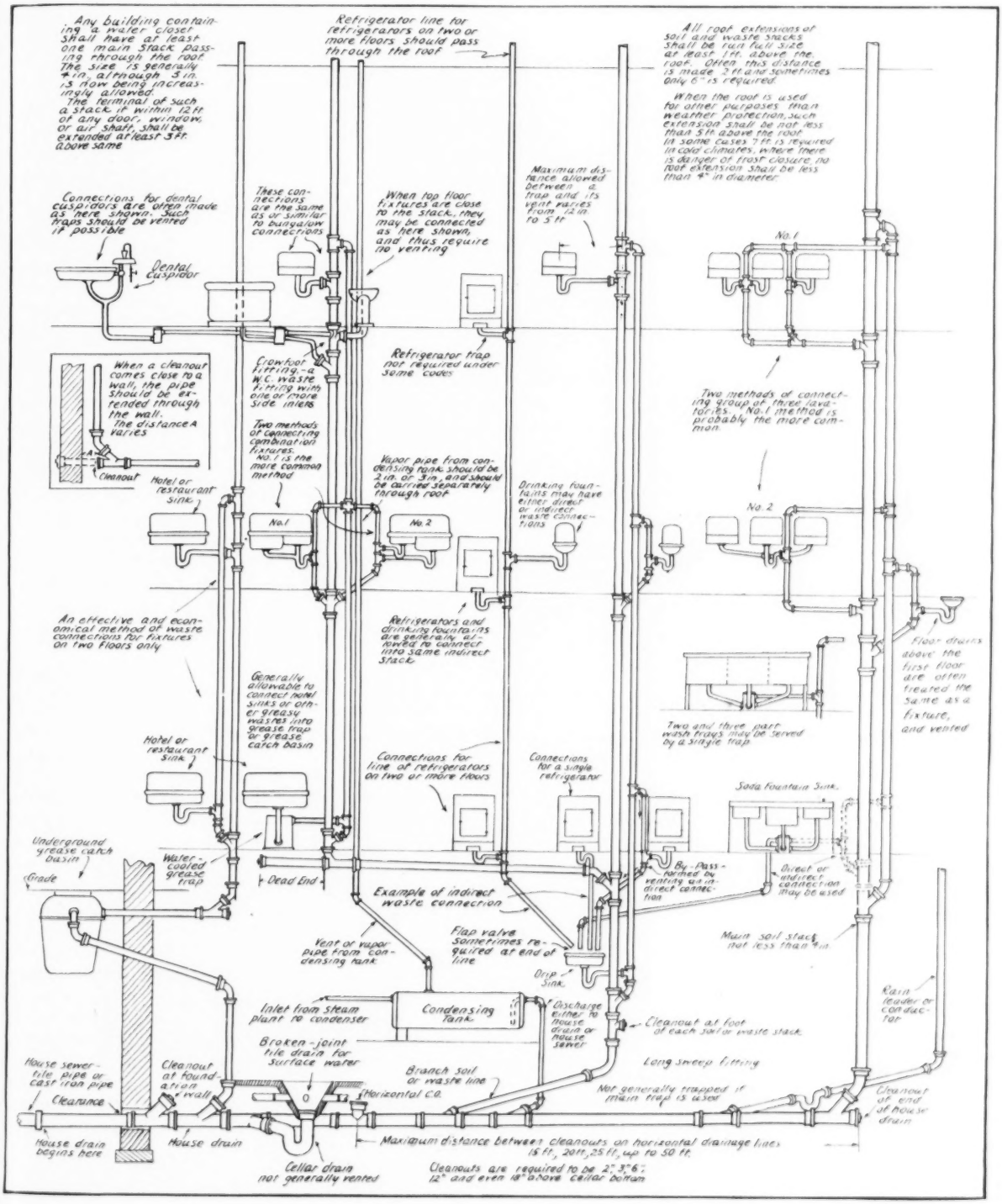
WHAT IS THE CORRECT DISTANCE FOR CLEANOUTS?

The drawing on the next page shows that the distance apart of these cleanouts as required by different plumbing codes is variously stated as 15 ft., 20 ft., 25 ft., up to 50 ft. Most codes recognize the need of having horizontal cleanouts, but the detail of the distance apart that they should be placed, is the difficult thing. And as long as the difference in detail persists, the man that has to pay for cleanouts placed 15 ft. apart is paying for something that accomplishes nothing.

The drawing shows that many plumbing codes demand that these cleanouts which are installed on the house drain shall extend a certain distance above the level of the cellar or basement floor. So far as we know, the real reason for this requirement is to prevent the opening of such cleanouts in order to allow water standing on the cellar bottom to drain off. The idea of preventing such use of cleanouts is legitimate, for it often happens that a cleanout plug or cap once removed for this purpose is never replaced, or is broken in removing it and never again makes tight. However, we have found that the height above the floor that is demanded, varies from 2 in. up to as much as 18 in. Why 2 in. isn't sufficient to

accomplish the desired result we do not know, and why such a height as 18 in. should ever be required, we also do not know. Here again, while the principle is a desirable one, the detail covered in its accomplishment is all over the lot. The third instance in cleanout practice that we want to point to is illustrated in the inset at the left of the drawing.

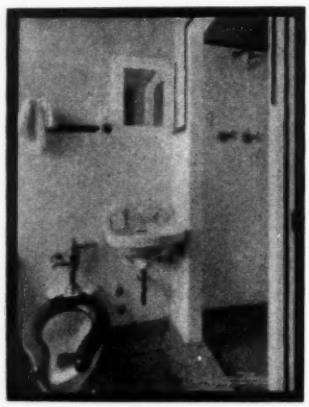
It will readily be agreed to that a cleanout located so close to a wall that it cannot be used in cleaning the pipe at that point is worse than useless. Also, it will be agreed that if accessibility cannot be obtained in any other way, the pipe should be extended through the wall and the cleanout placed in the end of the extension. The point is, however, how close the cleanout should come to the wall before it is required to be carried through the wall. A study of plumbing codes will show


Any building containing a water closet shall have at least one main stack passing through the roof. The size is generally 4 in. although 3 in. is now being increasingly allowed. The terminal of such a stack if within 12 ft. of any door, window or air shaft, shall be extended at least 3 ft. above same
Refrigerator line for refrigerators on two or more floors should pass through the roof
All roof extensions of soil and waste stacks shall be run full size at least 1 ft. above the roof. Often this distance is made 2 ft. and sometimes only 6 in. is required.
When the roof is used for other purposes than weather protection, such extension shall be not less than 5 ft. above the roof. In some cases 7 ft. is required. In cold climates, where there is danger of frost closure no roof extension shall be less than 4 in. in diameter.
Connections for dental cuspidors are often made as here shown. Such traps should be vented if possible
Dental cuspidor
These connections are the same as or similar to bungalow connections
When top floor fixtures are close to the stack, they may be connected as here shown, and thus require no venting
Maximum distance allowed between a trap and its vent varies from 12 in. to 5 ft.
No. 1
When a cleanout comes close to a wall, the pipe should be extended through the wall. The distance A varies
Cleanout
Crowfoot fitting—a W.C. waste fitting with one or more side inlets
Refrigerator trap not required under some codes
Two methods of connecting combination fixtures. No. 1 is the more common method
Two methods of connecting group of three lavatories. No. 1 method is probably the more common
Vapor pipe from condensing tank should be 2 in. or 3 in., and should be carried separately through roof
Drinking fountains may have either direct or indirect waste connections
Hotel or restaurant sink
No. 1
No. 2
No. 2
An effective and economical method of waste connections for fixtures on two floors only
Refrigerators and drinking fountains are generally allowed to connect into same indirect stack
Floor drains above the first floor are often treated the same as a fixture, and vented
Two and three part wash trays may be served by a single trap
Generally allowable to connect hotel sinks or other greasy wastes into grease trap or grease catch basin
Hotel or restaurant sink
Connections for line of refrigerators on two or more floors
Connections for a single refrigerator
Soda fountain sink
Underground grease catch basin
Water-cooled grease trap
Grade
Dead End
Example of indirect waste connection
By-pass—named by venting an indirect connection
Direct or indirect connection may be used
Main soil stack not less than 4 in.
Vent or vapor pipe from condensing tank
Flap valve sometimes required at end of line
Drip Sink
Rain leader or conductor
Inlet from steam plant to condenser
Condensing Tank
Discharge either to house drain or house sewer
Cleanout at foot of each soil or waste stack
Broken-joint tile drain for surface water
Long sweep fitting
House sewer—tile pipe or cast iron pipe
Cleanout at found-ation wall
Clearance
Branch soil or waste line
Horizontal c.o.
Not generally trapped if main trap is used
Cleanout at end of house drain
House drain begins here
House drain
Maximum distance between cleanouts on horizontal drainage lines 15 ft., 20 ft., 25 ft., up to 50 ft.
Cellar drain not generally vented
Cleanouts are required to be 2", 3", 6", 12" and even 18" above cellar bottom

that this distance varies from 6 in. to 36 in. We think 6 in. is hardly enough working space, but that it is ridiculous to demand this extension when the distance is as great as 36 in.

We do not know how we could illustrate our point any more clearly than by these three practices relating to cleanouts—it is not so much in principle that plumbing laws differ as in the detail of working these principles out.

There are many other variations in practice, and often it does not appear to matter a great deal as to which of two different practices one adheres. For instance, the drawing shows one practice of connecting a soda fountain sink directly to the drainage system, and another indirectly. In some cases, in fact a great many cases, use of the two methods is optional. The same thing is true of drinking fountains as of soda fountain sinks. The matter of economy will sometimes determine which is the wiser method to use, and it seems to us it is legitimate to make the decision on such a basis.



We would not want to say concerning either the soda fountain or the drinking fountain that either the direct or the indirect connection was the better. Possibly others will feel that one of the methods is superior to the other. In our way of thinking there are many plumbing practices which are capable of being worked out in two or more ways that are equally satisfactory. On the other hand there are certain cases in which we and others would have a decided opinion as to a proper choice between two or more methods.

For instance, the drawing shows two different methods of connecting a combination sink and tray. Method 1 uses one trap; method 2 uses two traps. We might have added a third method which we have seen used in a certain part of the country, and which calls for the separate trapping and venting of the two parts of this fixture, that is, treating it as if it were two entirely distinct fixtures. Our preference is to serve this fixture through one trap and to us it seems that method 2 is not economical and that the third method is actually extravagant.

We have even heard of demanding two traps for a three-part wash tray, and this too is an unpardonable extravagance.

TWO METHODS OF CONNECTING

The drawing shows two methods of connecting a group of three lavatories. Method 1 is our choice. Method 2 is in very extensive use and has become more common since it has been recommended in the Hoover code. With due respect to that excellent code, we do not agree with it regarding this particular practice. Under method 1, waste connections are shorter, and that is always desirable. In our opinion Method 1 makes a group connection that is less likely to produce odor from fouled waste connections.

In some instances the unit connection shown in connection with method 1 is not allowed, and this makes it necessary to use a separate waste and vent for each fixture. This again adds unnecessary expense. The unit vent is to be considered excellent practice and should not be discarded.

The point we wanted to bring out concerning the combination fixtures and the group of three lavatories is that here it would not generally be agreed that either of the two methods is equally desirable. We have shown that this is the situation, for in both cases we have taken definite sides in favor of one of the methods.

The drawing on which our article is based will bear considerable study, for a reading of the notes will reveal many comparisons of practice that will not appear from the drawing alone.

A chief purpose of the drawing is to give a composite picture of the plumbing practice relative to drainage, followed throughout the country. Many practices and probably most practices follow very closely the same general line, no matter what part of the country one goes into.

Cellar work is very much the same, wherever one goes. In some cases we have found cellar drains vented. Inasmuch as venting is done to prevent siphonage, and it is seldom that a cellar drain is in danger of siphonage, we fail to see the necessity of venting this drain.

When floor drains are located on floors above the cellar or basement, they are often treated the same as a plumbing fixture, and then their venting is called for.

A FEW CITIES PROHIBIT REFRIGERATOR TRAP

The drawing shows only one method of connecting a condensing tank. That means that so far as our investigation goes, the practice of connecting these tanks comes nearer being the same in all parts of the country than almost any other plumbing practice we know of. All codes that regulate this practice start from the standpoint that steam should not discharge either into the plumbing system or the public sewer, but that if first condensed, it may then so discharge. Practically all codes correctly demand a vent or vapor pipe from the condenser, installed with screwed pipe only, and carried separately through the roof, that is, under no conditions connected with the regular vent system. The only point of consequence in which there seems to be a variation is that while most codes allow the condensing tank to discharge into the house drain, a few demand that it discharge outside the foundation wall, into the house sewer. The latter demand seems to us the result of undue caution, for if it is seen to that the condenser is properly installed and equipped, it should discharge water sufficiently cool to produce no harmful results if discharged into the house drain.

The drawing shows two practices that certain cities

(Continued on Page 144)

ITEMS FOR STORE, SHOP AND JOB

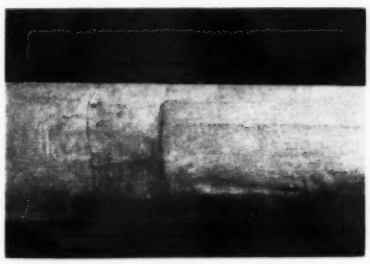
Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

This is the time of the year when business normally shows improvement. The end of the summer and vacation period is invariably marked by announcements of new plans, of new products and by renewed sales efforts. This year, the normal trend is accelerated by the fact that many companies have been holding back plans until business was better. The improved sentiment has now released announcements of new plans and products.

From the abundance of such announcements coming to this department and from information we have developed, the following items have been selected for illustrated description in this issue because of their timeliness, their newness or their interest to our readers.

A Pre-Shrunk Pipe Covering

A pipe covering of the asbestos cellular type has been placed on the market in a pre-shrunk form. It is designed to eliminate the formation of open spaces between lengths of covering after the job is placed in



operation and the material has been dried out. It is available in three finishes, with or without the regular canvas covering. First, it may be had in an asbestos paper finish; second, in an aluminum finish, which has been designed not to fade and third, in the regular canvas covering. Johns-Manville, 292 Madison Avenue, New York City is the maker of this new type of covering.

A Hanger for Shower Curtains

The accompanying illustration shows a shower curtain which has a new type of hanger. The smaller inserted view shows a close-up of it. It contains a

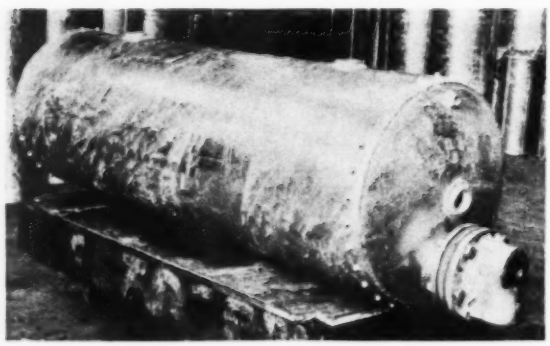
roller bearing on which the hook travels on the rod. The hook is designed to hold the curtain above the rod. The rod consists of rectangular tubing and the flange comes in two sizes, one is extra heavy for use with corner tub rods. The hooks merely slip into the holes in the curtain which are made for them. The item is made by Meneley-Diederich Co., Inc. This company is located at 1722 E. Seventh Street, Los Angeles, Calif.

New Model of Cold Water Meter Introduced

An announcement has been made recently of a new model cold water meter. It has been designed for ex-

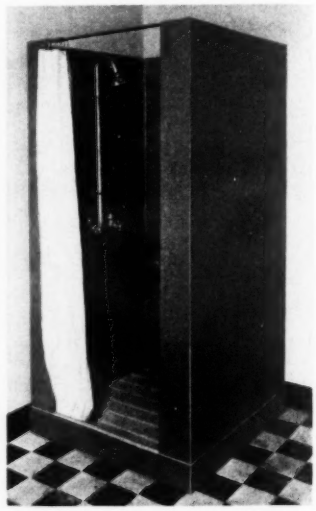
tremely low flows as well as intermediate and high flows. It is built in sizes ranging from ⅝ in. to 2 in. with normal flow limits of from 1 to 160 gal. per minute. Protection against freezing has been provided. The disc or measuring chamber is in two sections, held together by a snap joint which permits the case to separate without distortion in the event of freezing. Also, additional protection is secured by the use of a cast iron frost bottom on smaller meters which breaks to prevent strain on interior parts when freezing occurs. Worthington Pump and Machinery Corporation, Worthington and Warren Streets, Harrison, New Jersey, makes it.

Submerged Indirect Storage Water Heater



A new submerged type indirect storage water heater has been developed and just recently was placed on the market. The idea in back of it has been to provide in one unit, a storage tank and an indirect heater with the heater completely removable. It is for use in homes, apartments, stores and similar buildings. In operation, the boiler water is brought to the storage tank and is circulated through the coils. The head and bolts on the heating unit are plated to eliminate rust and thus facilitate removal. All seams are riveted and welded and are tested to withstand a hydrostatic pressure of 250 lb. per sq. in. This is manufactured jointly by the Pennsylvania Range Boiler Co., 24th and Washington Ave., Philadelphia, Pa., and the General Fittings Company, 100 Baker St., Providence, R. I.

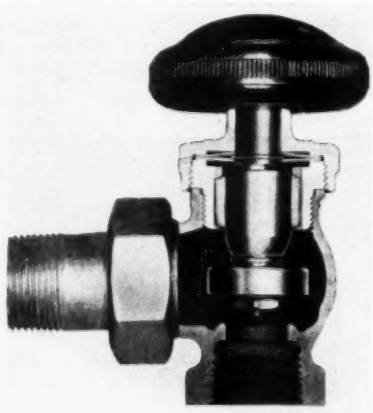
Shower Stall for Basement



The shower stall shown in the accompanying view has been designed to be installed either singly or in batteries of any number. The construction is all metal and the finish is baked enamel. The unit comes complete with valves, shower head and drain and has a number of advantageous uses. These are, installation in the basement to provide an auxiliary shower, in garages, industrial plants, summer cottages, clubs, golf quarters and the like. It is manufactured by The Sanymetal Products Co. of Cleveland, Ohio.

A New Type Bonnet Assembly

This item has to do with a new type of bonnet assembly which has been designed as a replacement unit for any

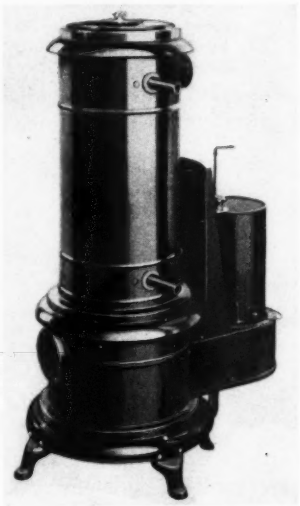


standard type of packed or packless inlet valves on radiators. The change-over is made by merely inserting the unit in the old valve body and screwing it tightly in

place. The packless feature of the valve is metal. Also, it is described as being quick-opening with a high lift construction. The manufacturer is Jas. P. Marsh Corporation, 2073 Southport Ave., Chicago, Illinois.

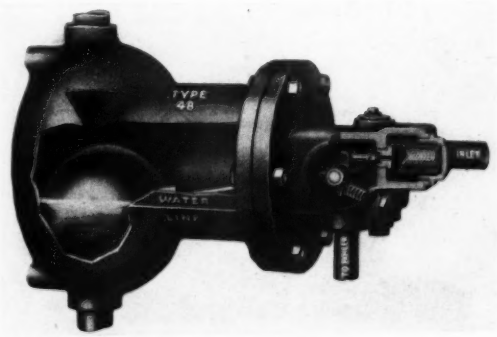
An Oil Burning Water Heater

The oil burning water heater which is referred to here contains a burner bowl or fire pot placed beneath a large copper coil. All of it is encased in a pressed steel case which is finished in vitreous enamel. The oil is supplied from a reservoir on the back of the heater. This is designed so that it may be taken out to the most convenient place for refilling. Also, it may be refilled while the heater is in operation. One model is made with a constant level valve for use with an outside fuel tank. The coil and the inside of the heater is made accessible for cleaning. It is manufactured by Perfection Stove Company of Cleveland, Ohio.



New Features Contained in Water Feeder

A number of new features have been built into this water feeder among which is that of accessibility of parts. It is stated that there are only four parts which



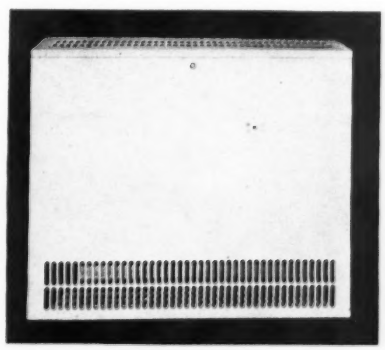
ever would require attention. The parts which have been made accessible are the feed valve mechanism, the seat for feed valve, the overflow valve, and the strainer. Cold water is prevented from entering the float chamber so as to prevent a false indication as to the conditions inside of the boiler. A single feeder can be converted to a dual feeder without tearing down the job and without cutting pipe or shutting down the heating system. Also, the water line can be changed after the installation has been made. Watts Regulator Co. of Lawrence, Massachusetts, is the manufacturer.

Incinerator and Water Heater for Home

This coal fired garbage burning water heater was placed on the market a short time ago for use in home installations. It is sized to fit 30- and 40-gal. range boilers. It is designed to burn any kind of soft coal, pea hard coal or pea coke. The grate is of the boiler type. Also, the ash and draft doors are of the boiler type. The garbage is burned and the water is heated at the same time in the one operation. The item is made by Betts & Cole Heater Co., located at Marshall, Michigan.

An Air Conditioning Unit for Cooling and Heating

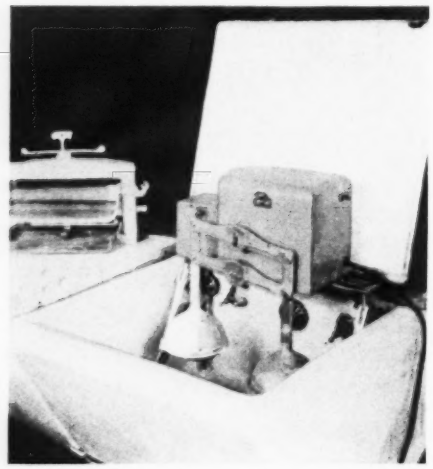
Here is a unit which combines facilities for both heating and cooling. Either brine or direct expansion gases may be used as the refrigerant in the cooling operation. Also, where the city or tap water is sufficiently low in temperature, the unit may be connected directly to the main for summer cooling. The coils are designed so that in the cooling operation, using mechanical refrigeration, either refrigerated water or the refrigerating gases can be circulated through them. This is specified in



connection with small building or suite-cooling installations. Three types of unit installations are available. These include the cabinet type which is illustrated, a suspended type with a propeller type fan and, for factory or industrial work, a type used in connection with ducts for carrying the air to various rooms. Humidification is accomplished in winter and dehumidification in summer. It is made by Trane Co., La Crosse, Wisconsin.

A Portable Washing Machine

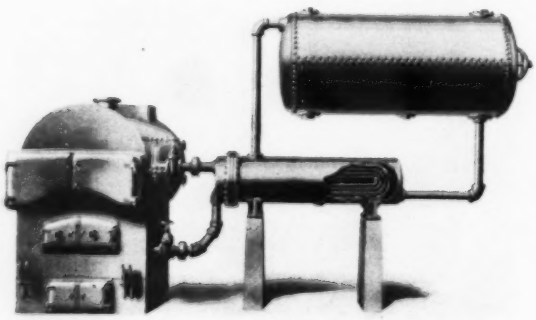
This portable electric washing machine has been developed for the small apartment dweller. It is made to wash, rinse, blue and wring the clothes in a stationary



laundry tray. When the washing is finished, the machine is folded away in the compartment and the lid covers it. Vacuum plungers are used and they may be raised or lowered to accommodate the amount of wash to be done. Also, the wringer is adjustable. It is built by Perfection Appliances, Inc., which company is located at 220 West 42nd Street, New York City.

An Improved Water Heater

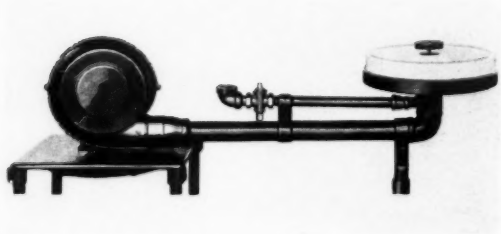
Here is a water heater which has been announced as an improvement on an older piece of equipment. Its chief features are listed as being heavy construction, a design allowing latitude for installation and



accessibility. The item is intended for use as an indirect circulating heater in connection with a storage tank. It is designed for installation as close as possible to the boiler, below the water line, and is connected to it by means of flow and return pipes. The idea is that in this unit, the boiler water should circulate through the shell while the water to be heated circulates by gravity through the coils. The shell of the heater is made of steel and all joints are electrically welded. Both sides of the tube sheet are machined to insure tight gasketed joints. The tubes are in the form of U-bends with both ends rolled into the tube sheet. The Patterson-Kelley Co. of 101 Park Avenue, New York City is the manufacturer.

Gas Burner for Domestic and Industrial Use

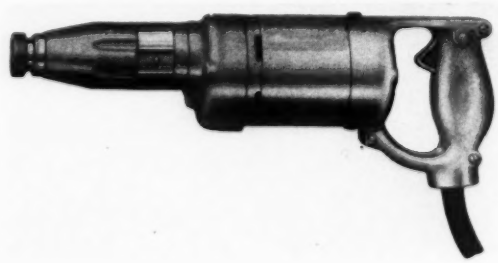
The gas burner unit which is shown in the accompanying illustration has been designed and placed on the market for both domestic and industrial equipment. It has been made to produce a radiant heat



and according to information received, it is for use with all kinds of gas without changes in the burner orifice. Also, it has been made to burn satisfactorily at any angle. The manufacturer is Burdett Manufacturing Company located at 19 N. Sheldon Street, Chicago, Ill.

An Electric Screw Driver

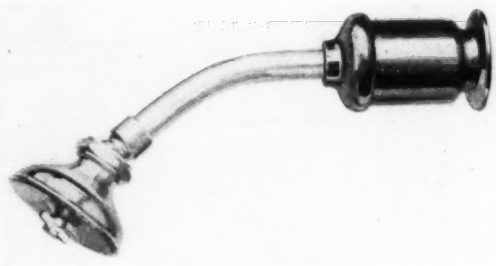
Two large type screw drivers with an adjustable tension clutch have been placed on the market. One of them is designed to drive screws as large as No. 12 —2 in. in hardwood with proper sized lead holes. Also, it may be used with socket wrenches to run on nuts. It weighs 8 lb. and has a full load speed of 235



r.p.m. The other tool drives No. 16—3½ in. screws in hardwood. The clutch releases at the pressure for which it has been set to prevent the screw from being sunk too deeply into the wood. It is made by The Stanley Electric Tool Co., of New Britain, Conn.

A Temperature Control for Showers

The item shown in the accompanying illustration is for the purpose of preventing the accidental scalding of shower users. It comes in three types for installation with built-in, exposed and institutional showers. The



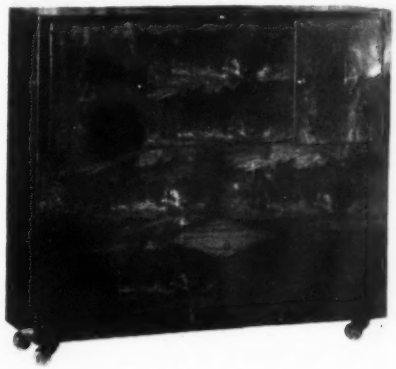
thermostatic element has been selected to withstand various waters. In the event the control becomes inoperative, it closes automatically to permit only a very small volume of water to discharge through a by-pass. The manufacturer is Art Fittings Co., Cleveland, Ohio.

An Improved Low Voltage Temperature Control

The accompanying illustration shows an improved low voltage type expansion valve temperature control device just recently placed on the market. It is described as being sensitive, having permanent magnets at the contacts to eliminate the fluttering of the elements. The design permits it to carry 25 watts. It is made by Detroit Lubricator Company, located at Trumbull, Lincoln, and Marquette Streets, Detroit, Michigan.

Portable Unit for Air Conditioning

An announcement just recently has been made in regard to there being placed on the market a portable unit for cooling, heating, humidifying or dehumidifying. For cooling, water, ice, or mechanical refrigeration may be used and for heating, the medium may be electricity, steam, or hot water. The two doors in the front of the unit shown in the accompanying illustration open the ice compartment. Conditioned air is exhausted out of the top. In cooling, the unit provides two possibilities. First, air may be cooled by passing it over a cooler through which ice water is pumped. Second, air may be passed through an ice water spray. The capacity is listed as being 300 lb. of ice, either flaked, cracked or cake. It is designed to deliver 500 cu. ft. of air per minute. Its application is to the home, office, store or shop. The waste water is discharged by turning on a hand valve and it is pumped out. The only connection is to an electric light socket. The manufacturer is Koolair-Maker Corporation, 4485 Olive St., St. Louis, Mo.



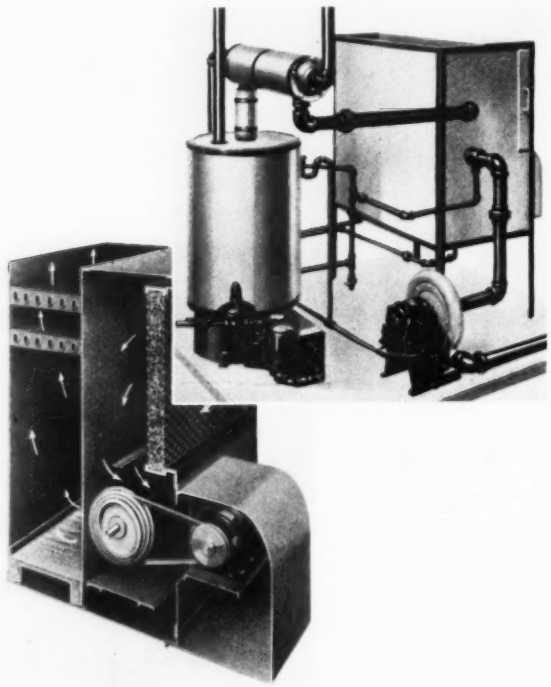
A Gas Fired Refrigerator Is Placed on Market

The accompanying illustration shows a gas refrigerator which just recently has been placed on the market. The following features were incorporated in its design: The temperature control is located on the exterior of the cabinet; defrosting is automatic; the exterior is porcelain with an acid resisting porcelain interior; the chilling unit is four inches from the nearest side wall; the absorption unit may be installed remotely, either in the basement, on a kitchen shelf or anywhere within fifty feet of the unit, and nine pounds of ice cubes may be made at a single freezing. The Faraday Refrigerator Corporation, Dayton, Ohio, is the manufacturer.

New Gas Boiler and Air Conditioning Unit

The accompanying two illustrations show, above, an exterior view of a new type of gas fired hot water heating boiler and air conditioning unit. It has been designed to modernize existing hot water heating installations and to supplement them with facilities for air con-

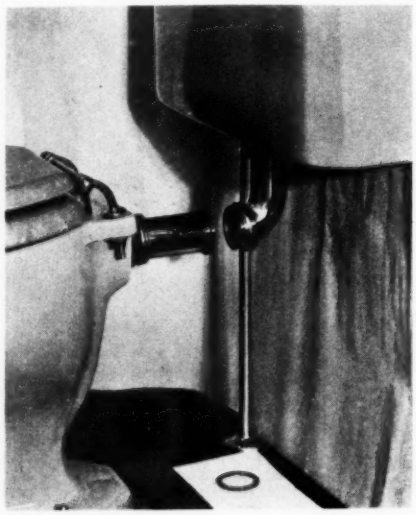
ditioning. The unit is self-contained for heating, humidifying circulating and filtering air in winter and cooling, dehumidifying circulating and filtering air in summer. The burned gases are exhausted by means of the centrifugal pump seen in the foreground. The job has been designed to eliminate the reconstruction of the chimney in many cases. Another feature of the heating boiler is that nothing above the basement need be changed when the installation is made. Also, the old plant may be left in place and cross-connected if desired. The air conditioning unit, a cross-section view of which is shown in the lower illustration, may be added to the job either with the original installation of this new gas boiler or at some later date. The burned gases give up their heat at three definite places before being exhausted. First, they encounter the main heating coil in the boiler for heating the water in the system. Second, they pass through an economizer to raise the temperature of the



return water before it reaches the main heating coil. Third, when the air conditioning unit is installed, they pass through two heating units over which the conditioned air is passed. The condensate is drained back to a water jacket surrounding the boiler and the gases are exhausted through the blower. The equipment is manufactured by C. A. Dunham Company, 450 E. Ohio St., Chicago.

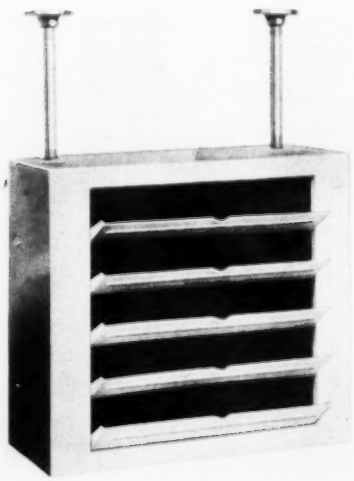
New Connection for Water Closet

The illustration below shows a new type of connection between the water closet and the flushing tank of a low-down closet combination. The coupling is designed to permit the removal of the bowl without disturbing the tank. The bend of the connection has been made sharp and the coupling has been designed to fit the spud of either the bowl or the tank with the idea of making it possible to install the connection in a minimum amount of space. The manufacturer is International Flush-Ell Company, 149 Jamaica Ave., Jamaica, New York.



Unit for Cooling, Heating and Dehumidifying

This new item is suspended from the ceiling for cooling, dehumidifying or heating such spaces as business or professional offices, restaurants, barber shops, beauty parlors, and similar establishments. The cooling medium is water which may be supplied from ice melting or mechanical refrigerating units. In mild weather, tap water may be used. A suitable hot water supply makes the unit usable for heating in winter. An electric fan and adjustable louvres regulate the distribution of air in the room after it leaves the coils. In new construction work, the unit may be built into the walls of the room which it is to heat or cool. The McCord Radiator and Mfg. Co. of 2587 E. Grand Blvd., Detroit, Mich., is the manufacturer of this item.

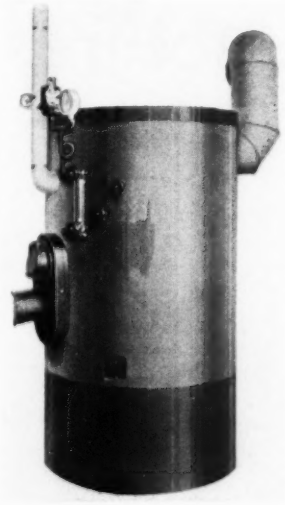


An Easily Cleaned Shower Head

Here is a shower head which has just been placed on the market and which has been designed so that sand or sediment can be flushed out without the use of tools and without dismantling. This is done by turning the

face by means of the lugs. Stops prevent it from being removed. Grooves cause the shower stream and are so arranged as to produce two circles of streams. Crane Co., 836 S. Michigan Ave., Chicago, Illinois, is the manufacturer.

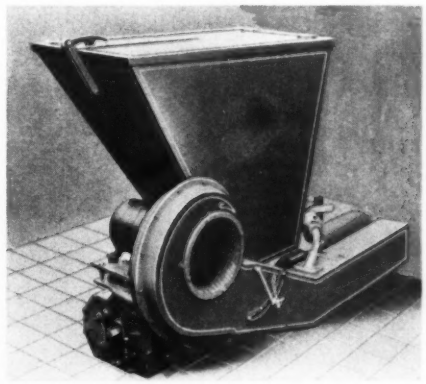
Boiler Designed for Oil or Gas Firing



The next item is a house heating boiler which has been adapted for either oil or gas firing, with gun type burners. Combustion is designed to take place in an upper combustion chamber. The hot gases pass downward into a bowl shaped chamber which is lined with insulating material and refractory cement. Here, they are deflected and they pass up through tubes and thence into the flue pipe. It is built in sizes having rated capacities at the take-off nozzle up to 2,500 sq. ft. of steam radiation or 4,000 sq. ft. of hot water radiation. The Bass Foundry & Machine Co., Fort Wayne, Indiana is the maker.

New Small Size Stoker Is Announced

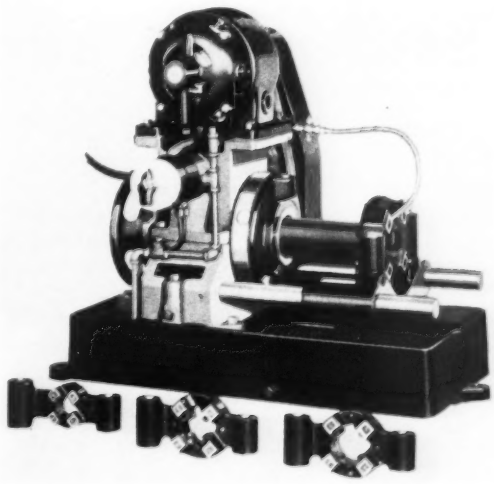
Just recently, a new size stoker was announced. It is small and especially designed for installation in the residential field in connection with steam and hot water heating plants. The item is complete with dual auto-



matic control including a room temperature control, overload and relay switches and a stoker switch. The latter prevents the fire from going out in mild weather. For hot water heating, a water temperature control is available and for steam, there is the pressure control. Butler Manufacturing Company located at 13th and Eastern, Kansas City, Missouri, is the manufacturer.

A New Two-Inch Pipe Machine

This pipe threading machine has been designed to meet the requirements of the average piping shop. The regular pipe capacity includes all sizes from ½-in. to



2-in. with extra capacities down to and including ¼-in. Pipe cut-off attachment is optional. It is made by The Oster Manufacturing Company of Cleveland, Ohio.

This chapter tells what vacuum systems are; the arrangement of a typical up-feed vacuum system; how to cross doorways with the return main; how to size the supply and return piping and other items necessary to a complete understanding of the subject. It is the thirteenth of the series

By HAROLD L. ALT

Heating in Residences and Small Structures

VACUUM systems are so termed on account of the conditions existing in the return line and not due to any vacuum which may or may not occur in the radiators. There are many vacuum systems operated with a constant pressure on the steam line of anywhere from two to five pounds and this does not make them any less vacuum nor does it include them in the gravity or vapor classifications. Originally vacuum systems were developed with the idea of providing some more positive and quick method of getting returns back to the boiler in large buildings than is offered by the gravity system of either one-pipe or two-pipe variety.

Every vacuum system has a vacuum pump to handle both the air and water coming back through the return mains, such pumps returning the water to the boiler either direct or through some other apparatus such as an air separating tank, feed water heater and boiler feed pump. In the ordinary small building installation it is usual to employ an electrically operated vacuum pump which has a receiver and vacuum control so arranged that the water coming back is pumped into the boiler and the air is separated from the water and expelled from

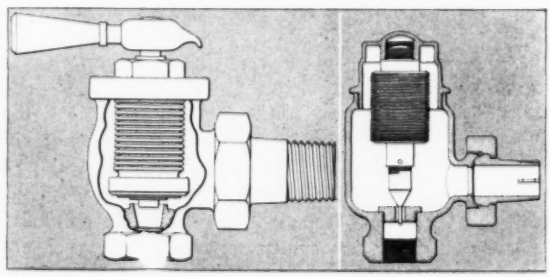


Fig. 58—Left: Graduated type of radiator valve. Fig. 59—Right: Thermostatic trap of the bellows type. Both are for vacuum systems

IT STANDS ALONE

in its

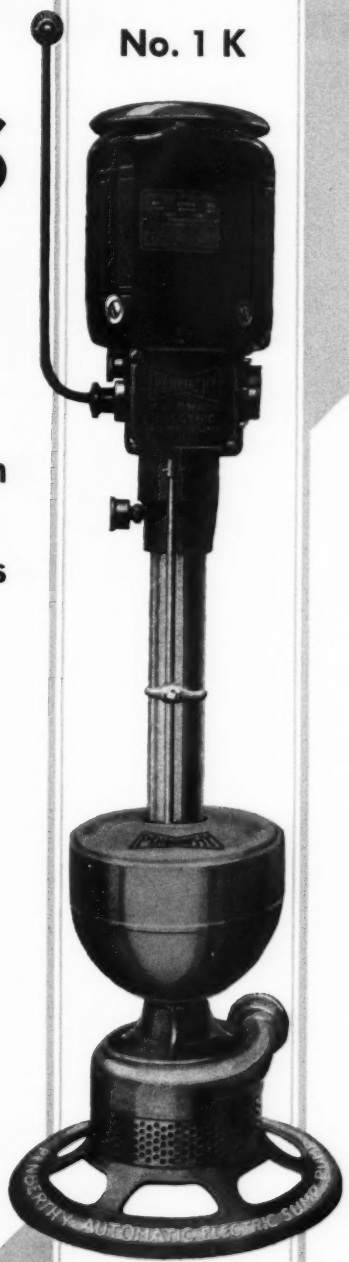
excellence of design

quality of materials

high grade workmanship

performance

dollar value



No. 1 K

PENBERTHY PRODUCTS

If you will examine the Penberthy Model K Sump Pumps and make your own comparisons, you will invariably come to the conclusion that these Model K Pumps have no close rivals—that they stand alone.

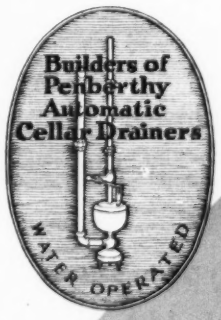
Limited space does not permit listing all features of these Model K Pumps, but your attention is directed particularly to the following:

1. Rustproof because of copper and bronze construction throughout.
2. Exceptionally rugged ¼ h.p. repulsion-induction motor having ball thrust bearing for vertical operation.
3. Circuit breaker that protects motor against damage from overloading or improper voltage.
4. Mercury switch that assures dependable operation.

Penberthy Model K Automatic Electric Sump Pumps are made in five sizes for any sump depth up to 8 feet 6 inches. They are carried in stock by jobbers everywhere.

PENBERTHY INJECTOR CO.

Established in 1886 **DETROIT** Canadian Plant Windsor, Ont.



LIST PRICE

$65.00

¼ h. p. repulsion-induction motor. Maximum capacity 3600 gal. per hour.

COPPER AND BRONZE THROUGHOUT

PENBERTHY SUMP PUMPS

COLUMBIA-PRESBYTERIAN MEDICAL CENTER

ONE OF THE MANY GREAT NEW YORK HOSPITALS
EQUIPPED WITH SLOAN FLUSH VALVES

ARCHITECT
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ASSO. ARCHITECT
Henry C. Pelton · · · · New York

PLUMBING JOBBER
Crane Co. · · · · · · New York
PLUMBING CONTRACTOR
W. G. Cornell Co. · · · · New York

SLOAN VALVE CO · CHICAGO

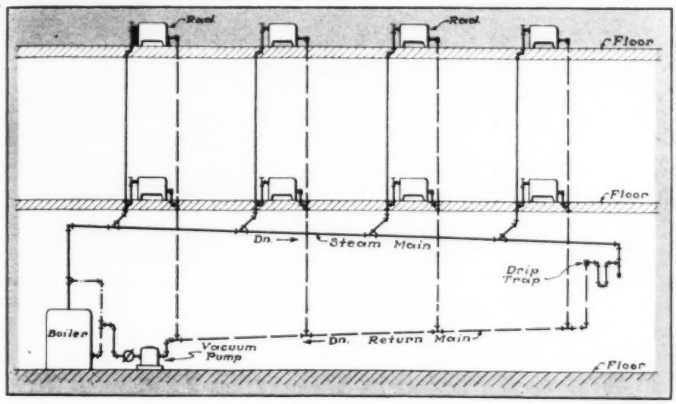


Fig. 60 — Piping arrangement for a typical vacuum system of the upfeed type

the system. The automatic control is arranged to start the pump whenever the vacuum in the return line falls below a certain fixed amount and to stop the pump when it rises to another fixed amount of vacuum slightly higher. Steam-driven vacuum pumps are not used generally on the small job, owing to the lack of steam at sufficient pressure to operate them.

OPERATING FEATURES OF THE VACUUM SYSTEM

Vacuum systems maintain a pressure on the steam line—usually varying from 2 to 5 lb.—and carry this pressure at all times unless the steam deliberately is shut off when weather conditions make any heat at all, unnecessary. The system also carries a vacuum at all times unless the vacuum pump is deliberately arranged to return water only at certain times such as at night, when a great deal of steam is not being used, or when the steam supply is being throttled down to reduce the amount of steam used. Graduated valves are nearly always employed on the radiators except the radiators which may be equipped with temperature control regulation. Thermostatic traps are invariably used on the returns from the radiators and for draining the steam main at whatever points may be necessary.

Steam may be supplied to the radiators through an upfeed or downfeed system of piping but the return pipe system of course is always below the lowest radiator or steam main unless lift fittings are installed, a subject that will receive attention later on in this chapter. The returns should be pitched to drain back to the vacuum pump so that no water pockets will exist to hold back the air and the steam main usually is pitched downward in the direction of the steam flow to keep away from the necessity of using larger pipes than necessary. The steam main may be dripped at any place desired and the drip simply connected into the return main through the thermostatic trap previously mentioned. The return is a dry return and has no water line; it cannot be dropped below the level of the inlet to the vacuum pump, however, unless a lift fitting is used to rise back to the level of the vacuum pump inlet before the return line enters the pump.

In Fig. 60 is given the piping arrangement for a typical vacuum system of the upfeed type with both the supply and return main carried on the basement ceiling; it will be noted that the steam main rises up to a high point directly at the boiler and then grades down from this high point to the far end where it is dripped and the trap discharge enters the return. The return starts at the last radiator return riser and pitches back toward the boiler until it reaches the vacuum pump located close to the boiler. Here the air and water are separated and the water is pumped back into the boiler through the vacuum pump discharge which contains a check valve. It is important in all vacuum work that no connection from the steam main should be made direct to the return main except through a thermostatic trap. If such a connection is made, the steam (under its pressure) will rush directly into the return (which is under a vacuum) and will destroy the vacuum as well as heat the return line.

There are several types of graduated control valves on the market, one of which is illustrated in Fig. 58.

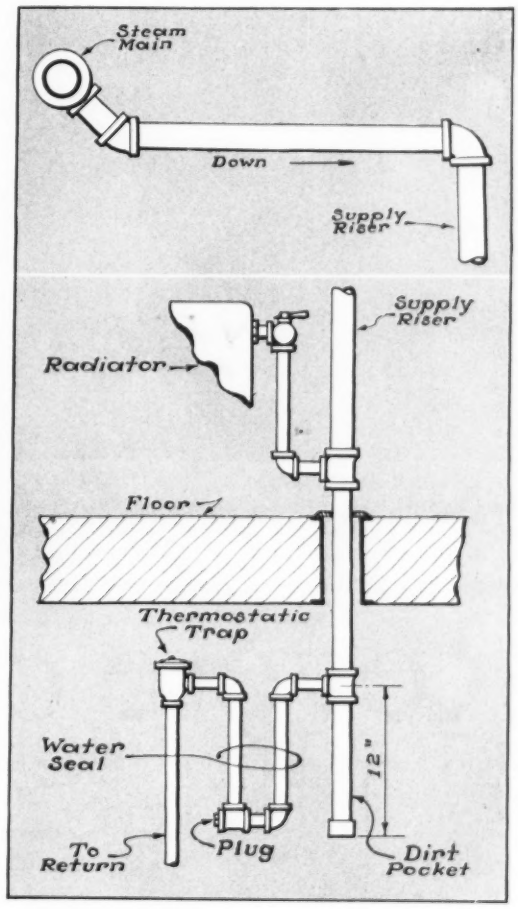
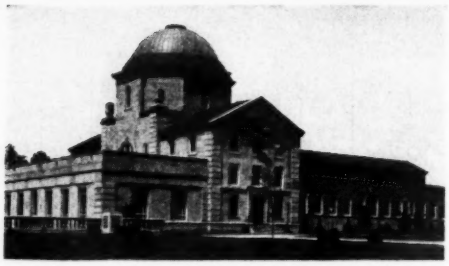


Fig. 61—Above: Typical runout used for downfeed systems which permits running the steam main flat without pitch. Fig. 62—Below: Method of dripping bottom of downfeed steam risers on vacuum systems

What a job of piping!



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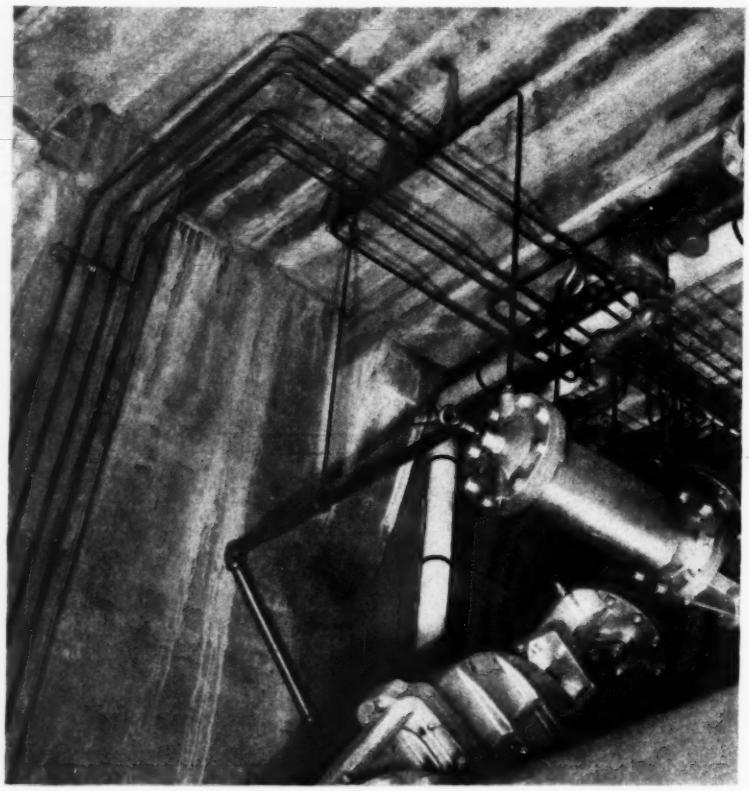

600 fittings were saved by bending PR Pipe, Hard Temper . . . notice how clean, how smooth the bends are! These 600 bends were made by a bending tool. Fittings used were compression type . . . tight, leak-proof. Note also the long, straight runs. Minimum of hangers needed. The job called for a dependable, rust-proof, life-long piping system. PR Pipe is the answer!

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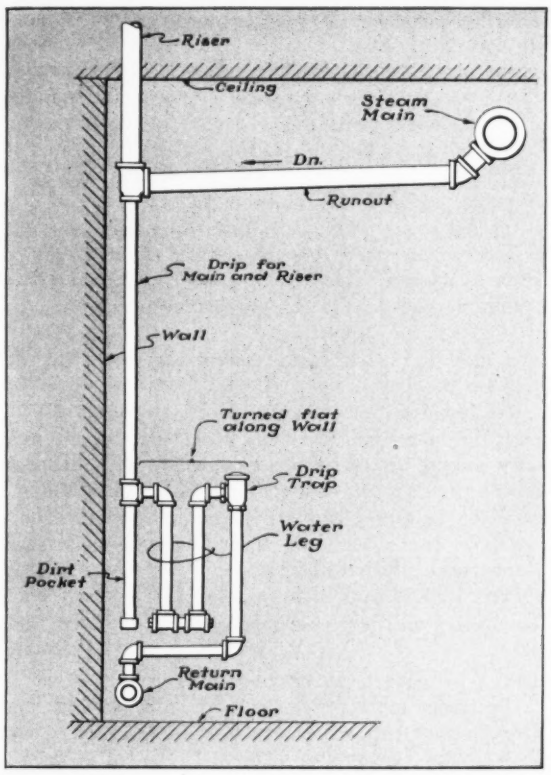


Fig. 63 — Method of making runouts from basement main and of dripping the main through the runout, thus permitting the steam main to be run flat

The inlet valves are installed on the top connection of the radiator and should have a union connection between the valve and the radiator spud which accompanies the valve for screwing into the radiator tapping or bushing. Various manufacturers have established ratings for their graduated valves and the ratings on the particular make of valve selected should be used in preference to any general ratings and certainly without regard to the ratings on some other type of valve which may have an entirely different method of obtaining the graduation of the supply steam.

The return traps used on the radiators have been more or less completely described under Vapor Heating, where similar traps often are employed. Fig. 59 shows a type of thermostatic trap. Both the bellows and disc type of valve are used. Vacuum systems cannot be operated without the thermostatic trap on the radiator return, the purpose of this trap being to prevent the admission of steam or vapor to the return line, where it would be likely to destroy, or partially destroy, the vacuum which should exist in the return portion of the system.

UPFEED AND DOWNFEED SYSTEMS

The steam main may be run as an upfeed or downfeed with equal facility; the downfeed system is largely used in big buildings, in order to remove the large sized piping from the lower floors as far as possible; but in the smaller installations, with which this series particularly has to deal, the upfeed arrangement is probably the most usual.

In the case of downfeed, all of the steam is carried to the top of the building in one or more main steam risers and the distribution piping is pitched downward from the top of the main riser down to the farthest riser supplied; with such a layout it is customary to drain the steam main down through each riser connection and, when these riser connections are taken off of the bottom of the main, or at a downward angle, such as is illustrated in Fig. 61, the steam main may be run flat if desired. This often is a great advantage where vertical space is limited.

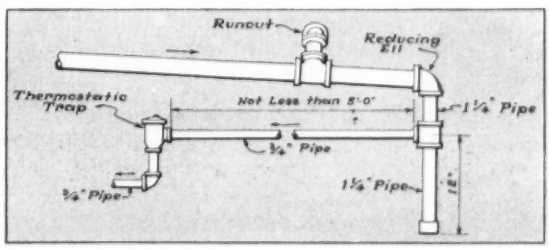
The downfeed riser, as far as the supply riser is concerned, reduces in size as it proceeds down through the various stories and the radiator connections are taken off. At the bottom these risers must be dripped in the manner shown in Fig. 62—or its equivalent—and should be increased one pipe size at the two lowest radiator connections to allow capacity to take care of condensate coming down the riser. The return risers remain the same as on the upfeed system.

The upfeed system employs risers arranged in the usual manner; that is to say, all risers, both steam and return, start from the highest radiator and proceed downward enlarging as they pick up the various radiator connections until they reach the basement and connect to the supply main or return main there located as the case may be. The steam risers in the upfeed system do not necessarily have to be dripped at the bottom, but this is customarily done in cases where risers run up three stories or more. If the runouts from the steam main in the basement are made in a downward direction so that the condensation will flow out of the main at each runout and if the bottom of each supply riser is dripped as illustrated in Fig. 63, then the basement main also may be run flat if desired.

BASEMENT MAINS

With the steam main located in the basement and dripped risers with runouts taken out of the bottom of the main, it is possible to carry the main perfectly flat and without pitch but, if the runouts are made from the top of the steam main, then the steam main must be pitched and dripped on the end as illustrated in the typical system previously shown in Fig. 58 and as illustrated in detail in Fig. 64. The return main must al-

Fig. 64—Dripping of a pitched steam main on a vacuum system where runouts are made to run upward from the main



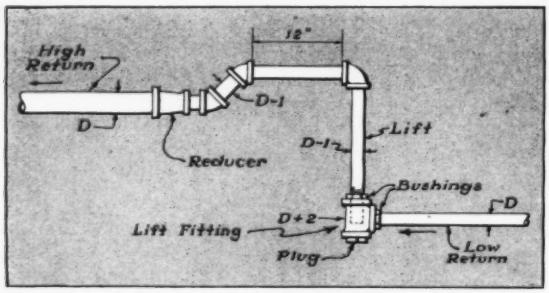


Fig. 65 — Typical lift in return constructed from pipe and fittings

ways be pitched downward and uninterruptedly towards the vacuum pump and if this main gets too low at the vacuum pump to enter the inlet, either the vacuum pump must be placed in a pit or a lift must be placed in the return line. It is never advisable to use a lift if any other solution presents itself but sometimes lifts are unavoidable and the vacuum system is the only system of steam heating which can lift its own return.

In order to construct a lift, a tee two pipe sizes larger than the main return pipe size is placed at the point where the lift is desired and a pipe one size less than the main return is inserted into the outlet of the tee looking up—see Fig. 65—and after rising slightly above the level to which it is desired to raise the return, the pipe is turned horizontally and is run 12 in. horizontally, then dropped down to the new return level through two 45-degree ells all as illustrated. In the cut the diameter of the main return is taken as "D" and the pipe sizes above or below this "D" are indicated as "D"-1, or "D" plus 1, this indicating one pipe size below "D" and one pipe size above "D" respectively.

Oftentimes, when running the return main along walls, etc., it is necessary to cross a doorway, window, or other obstruction and this can be done by dropping the main return under the floor or below the window and connecting an air line across the loop in the manner indicated in Fig. 66. The return main on the pump side of the loop should start off about 1 in. below the level at which the main enters the loop on the high side. The operation of such a piping arrangement is to let the water of condensation find its way through the bottom pipe and the air across the air pipe at the top. Of course, the bottom portion of the loop stands full of water all the time up to the level of the return main leading to the pump; a valve in the air line at "A," however, will permit emptying out this loop by the suction of the vacuum pump whenever desired by simply closing the valve in the air line. This valve must be kept open when the system is in normal operation.

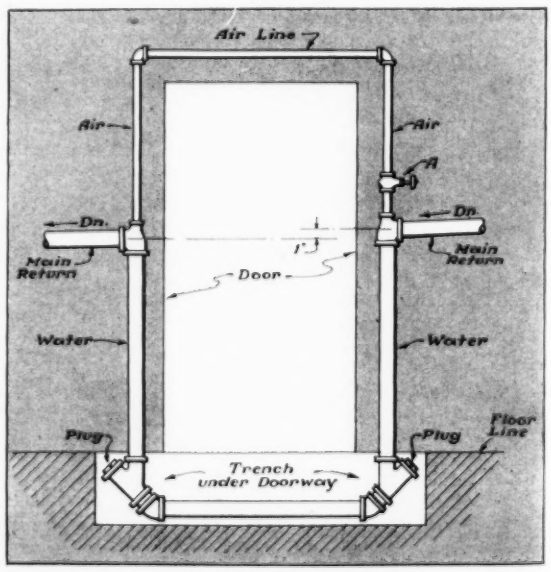
PIPE SIZING ON THE SUPPLY SIDE

The pipe sizes on a vacuum steam system will run somewhat smaller than a vapor system for equal loading if a slightly higher drop is allowed in the steam main; of course, they may be sized for exactly the same drop and then the pipe sizes on the steam side will correspond. First the radiator tappings, the size of valve and runout will be considered; each manufacturer, of course, has the ratings which he considers peculiarly suitable for the particular valve which he may manufacture and if the make of valve to be used is known, the manufacturer's ratings may be followed without difficulty. In a great many cases, however, the make of valve is not decided upon until the radiators have been ordered for some time and it is advantageous to have some schedule of tapping sizes which will suit practically any make of inlet valve which may be decided upon finally for use on the job. Table XXIX gives this information as a guide as well as the size of runout which should be installed for the supply valve.

On the supply risers the ratings are somewhat less than on the steam main if the risers are of upfeed variety because the condensate from the riser must flow down the risers and must not meet such a velocity of steam coming up the riser as to interfere with this downward movement of condensate. Table XXX gives a schedule which may be used for sizing upfeed risers but downfeed risers are sized from the same table as the steam mains which will be quoted presently. The runout from the steam main to the riser—on an upfeed system, if not dripped—should be sized from the fourth column of Table XXIX, which is marked "Runout Diam." and follows the column for valve sizes.

The steam main for a total pressure drop of 4 oz., or ¼ lb., may be sized from the schedule given in Table XXXII, the "Length of Run in Feet" being taken as the distance from the boiler outlet to the farthest radiator plus the proper allowance for all elbows, tees, valves, etc., as has already been explained in previous portions of this series; in other words, the length of run is the "Equivalent Length of Run." Table XXXII also should be used for runouts to radiators and risers where dripped and with the condensate flowing in the same direction as the steam, but, if the runout is not dripped and must have the condensate drain back against the flow of the steam, then

Fig. 66 — Correct method of crossing doorway with return main to avoid lifts



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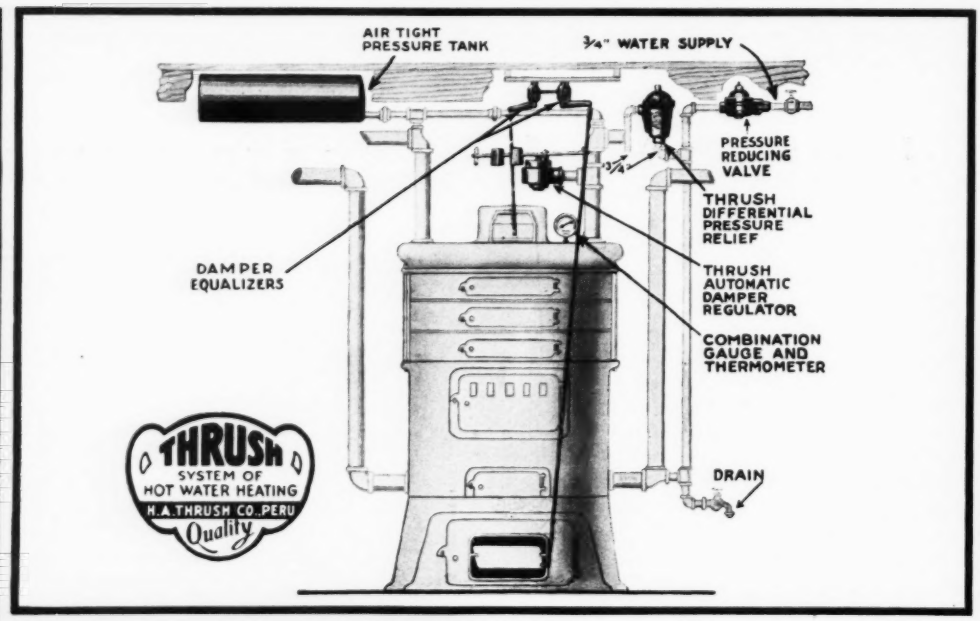

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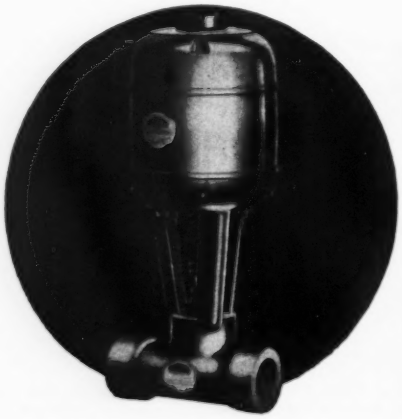

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the schedule given in Table XXXII should be used for sizing these runouts.

SIZING THE RETURN SYSTEM

The return system is much easier to size than the steam system because it has so much greater capacity;

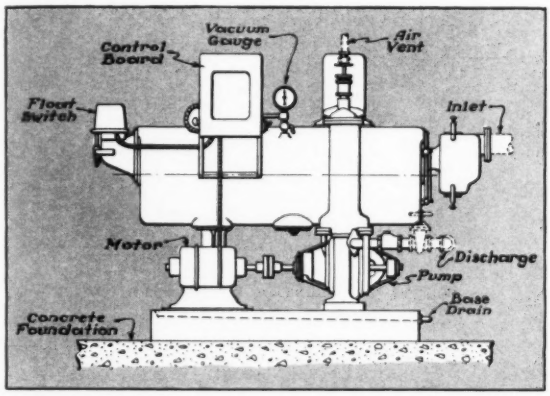


Fig. 67 — Example of common type of vacuum return pump

in most installations all return risers will be found to figure out as ¾-in. size regardless of the amount of radiation that they may serve and it is only when very high buildings or excessively large radiators are encountered that this size will need to be enlarged. The tappings on the return ends of the radiators can be made to suit the size of trap recommended by the manufacturer for the amount of E. D. R. involved or—in the absence of this information—the return tappings may be made in accordance with the schedule quoted in Table XXIX, last two columns. Return risers may be made in accordance with the ratings shown in Table XXXIII for risers and it will be seen that a ¾-in. return riser will carry anything up to 1400 sq. ft. of E. D. R. Piping ½-in. size is not considered good practice on any part of the heating system owing to its lack of mechanical strength and to the small amount of corrosion which would materially reduce its interior area. This is the reason that no ratings are given in either the supply or return pipe size tables for ½-in. pipe.

The return main is sized up so as not to carry more than the allowable ratings as given for return mains in Table XXXIII and sometimes is increased one pipe size in order to allow slightly more for partial stoppage by corrosion or sediment and to get a thicker pipe shell which will not rust out so quickly as a smaller pipe will with a lesser thickness of shell.

The vacuum pumps used on vacuum jobs are either steam driven or electric driven; on the small job it is not usual to have high pressure steam available so that

TABLE XXIX
Radiator Valves, Traps, Runouts and Tappings for Vacuum Systems

Size of Radiator Sq. Ft.	Tappings Sup. x Ret.	Valve Size	Runout Diam.	Trap Size	Runout Diam.
0 to 38 sq. ft.	1 x½	1	1¼	½	¾
38 to 68 sq. ft.	1¼x¾	1¼	1½	¾	1
68 and over sq. ft.	1½x¾	1½	2	¾	1

Note—The above sizes are amply large to suit the most conservative ratings on valves and traps and—if the make of accessories is known—the sizes may, perhaps, be reduced to agree with the ratings on the equipment actually to be used.

TABLE XXX
Upfeed Supply Risers for Vacuum Systems

Nominal Size of Pipe In. Diam.	Radiation Sq. Ft.
1	56
1¼	122
1½	190
2	386
2½	635
3	1129
4	2042

TABLE XXXI
Branches to Supply Risers and to Radiators—Not Dripped

Nominal Size of Pipe In. Diam.	Radiation Sq. Ft.
1	26
1¼	58
1½	95
2	195
2½	395
3	700
4	1700
5	3150

Note—Above tables from the American Society of Heating and Ventilating Engineers' Guide—1931.

TABLE XXXII
Supply Mains for Vacuum Systems

Nominal Size of Pipe In. Diam.	Length of Run in Feet 100	200	300
	Radiation		
1	111	79	65
1¼	245	173	141
1½	380	269	220
2	771	546	446
2½	1270	898	734
3	2326	1645	1342
4	4914	3475	2828
5	9092	6429	5250
6	14924	10553	8618
8	31066	21967	18935
10	56689	40085	32730
12	90985	64336	52530

Note—Above table from American Society of Heating and Ventilating Engineers' Guide—1931.

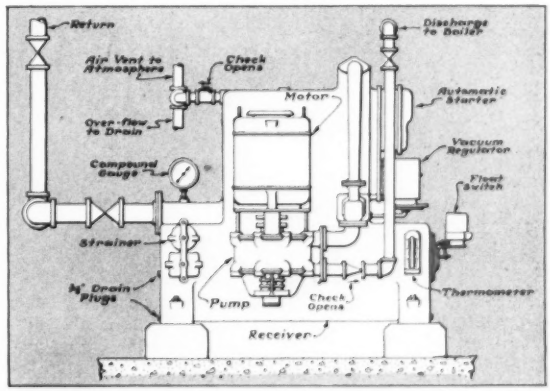


Fig. 68—Another type of vacuum return pump with vertical motors, one on each side

the steam driven vacuum pump is usually only found in large installations and where a use for the exhaust steam from the pump can be found. The electric driven vacuum pumps may be either of the piston or centrifugal type, but in most cases are the latter. The function of the vacuum pump is to produce a partial vacuum on the return line and to remove the water of condensation from the system, returning it to the proper destination, as well as to eliminate the air by discharging it out of the system. Such pumps are accompanied by a receiver in most cases and have a float

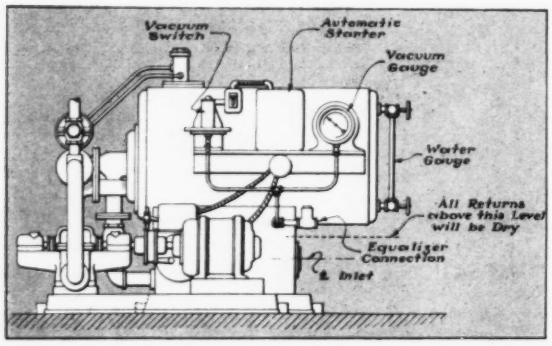


Fig. 69—A third type of vacuum pump

TABLE XXXIII

Return Main and Riser Sizes for Vacuum Systems

Nominal Size of Pipe In. Diam.	Equivalent Length of Run in Feet — Radiation		
	100	200	300
½ (Riser)	0	0	0
¾ (Riser)	1400	994	810
¾ (Main)	800	568	462
1 (Riser)	2400	1704	1387
1 (Main)	1400	994	810
1¼ (Riser)	3800	2696	2195
1¼ (Main)	2400	1704	1387
1½ (Riser)	8000	5680	4622
1½ (Main)	3600	2696	2195
2 (Riser)	13400	9510	7745
2 (Main)	8000	5680	4622
2½ (Riser)	21400	15190	12360
2½ (Main)	13400	9510	7745
3 (Riser)	32000	22700	18490
3 (Main)	21400	15190	12360

Note—Above table from the American Society of Heating and Ventilating Engineers' Guide—1931.

control and a vacuum control; the float control is to insure the relief of the water and the vacuum control is to cut off the pump when sufficient vacuum has been attained as well as to start the pump again when the vacuum has decreased to a given predetermined level.

In Fig. 67 is shown the outline of one type of centrifugal vacuum pump with the receiver set on top of the pump so as to give a head to prime the pump at all times. The main return enters through the strainer shown on the right hand end of the receiver and the discharge takes place through the check valve and dotted pipe shown just below the strainer and at the same end of the receiver. On the far side of the receiver is mounted a second pump exactly similar to the one indicated on the near side, thus making a duplex unit. The control board is shown on top of the receiver near the vacuum gauge with a connection from the vacuum gauge on one side and from the float switch on the left hand end of the receiver. The vacuum in this apparatus is produced by a whirling mass of water in the pump which is amply explained in the manufacturer's catalogs but which is too long to be gone into in detail here.

Another make of pump is that illustrated in Fig. 68, where the receiver is set between two pumps and the vertical pump motors; there is another pump and motor on the far side of the receiver which are not shown in the drawing but which correspond in every particular to the one shown on the near side, thus making this a duplex pump. The compound pressure and vacuum gauge is shown mounted on the left hand end of the receiver, while the thermometer is shown on the right hand end along with the float switch control; the returns enter somewhat lower on this pump and this is a help in cases where the returns are forced close to the floor level due to long runs or low construction to be cleared.

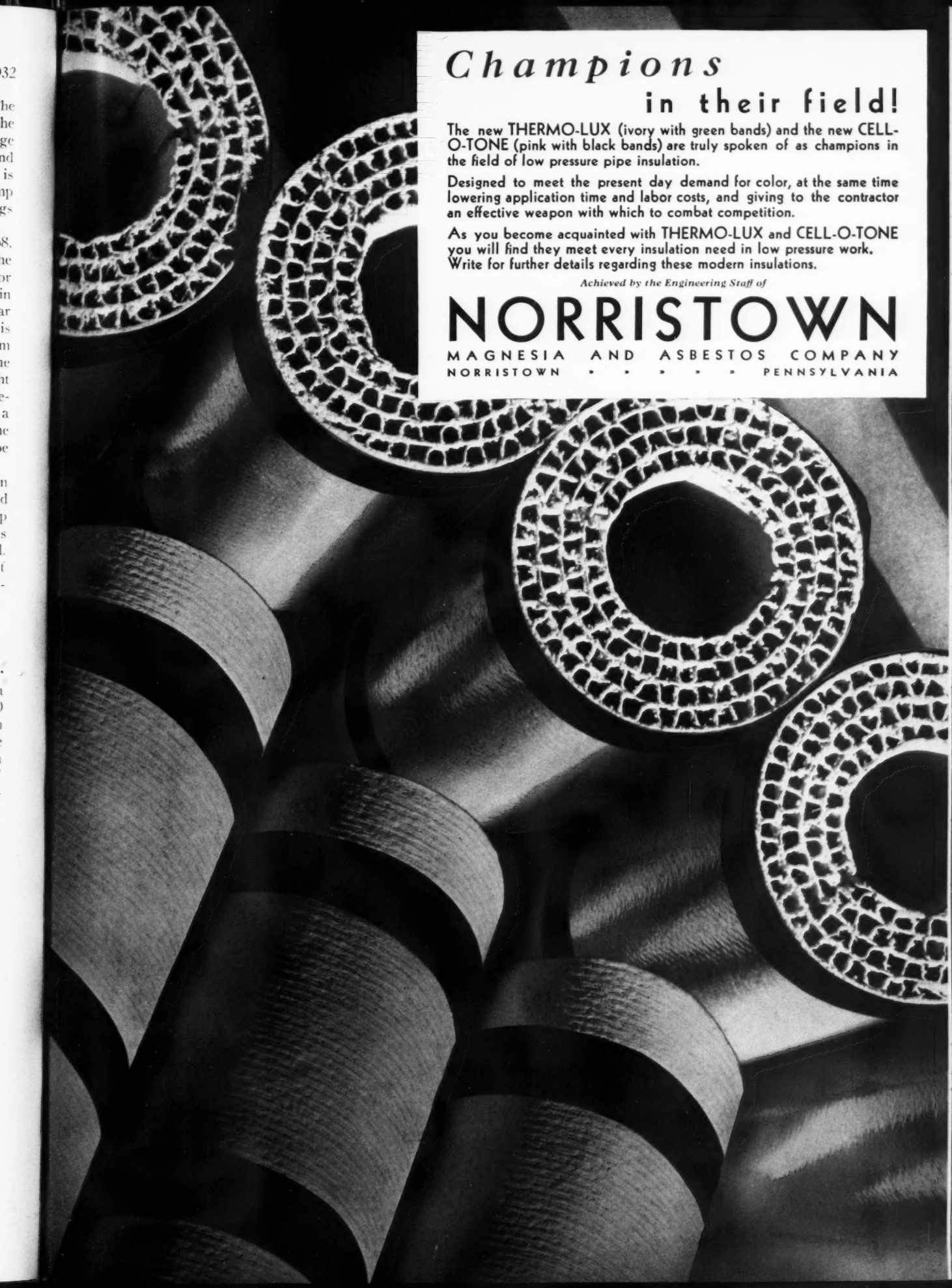
Still a third type of vacuum pump is illustrated in Fig. 69, this having a very low return connection and low water line as indicated. There also is another pump and motor on the far side of the receiver making this a duplex unit the same as the pump previously described. In the next chapter some practical installations of vacuum systems will be shown and their features discussed.

Good Air Conditions Aid Human Comfort

Human beings can do four times as much work in a temperature of 100 F. when the relative humidity is 30 per cent than when it is 100 per cent, and can perform at maximum efficiency only between the temperature limits of 40 and 75 F., according to facts quoted in a report just issued by the policyholders service bureau of the Metropolitan Life Insurance Co., entitled "Air Conditions and the Comfort of Workers."

Humidity and air motion as well as temperature must be considered if conditions most favorable to health and efficiency are to be maintained. "The control of air temperature," the report states, "without reference to its moisture content or rate of movement, was at first believed to be the best method of providing comfortable conditions. This belief still persists to some extent, although ample evidence is available indicating the influence of both the dry and wet bulb temperature, as well as the rate of air movement."

The report describes simple methods of measuring humidity and air motion, and explains how air is "conditioned" for comfort and efficiency. According to the report, extensive researches have been made "on human subjects exposed to unusual temperatures and humidities under accurately controlled environmental conditions." These have shown how and to what extent man loses his physiological efficiency beyond certain temperature limits. The experiments and the limits established are then discussed in some detail. Methods of removing excessive heat and moisture, and of cleansing the air are also described.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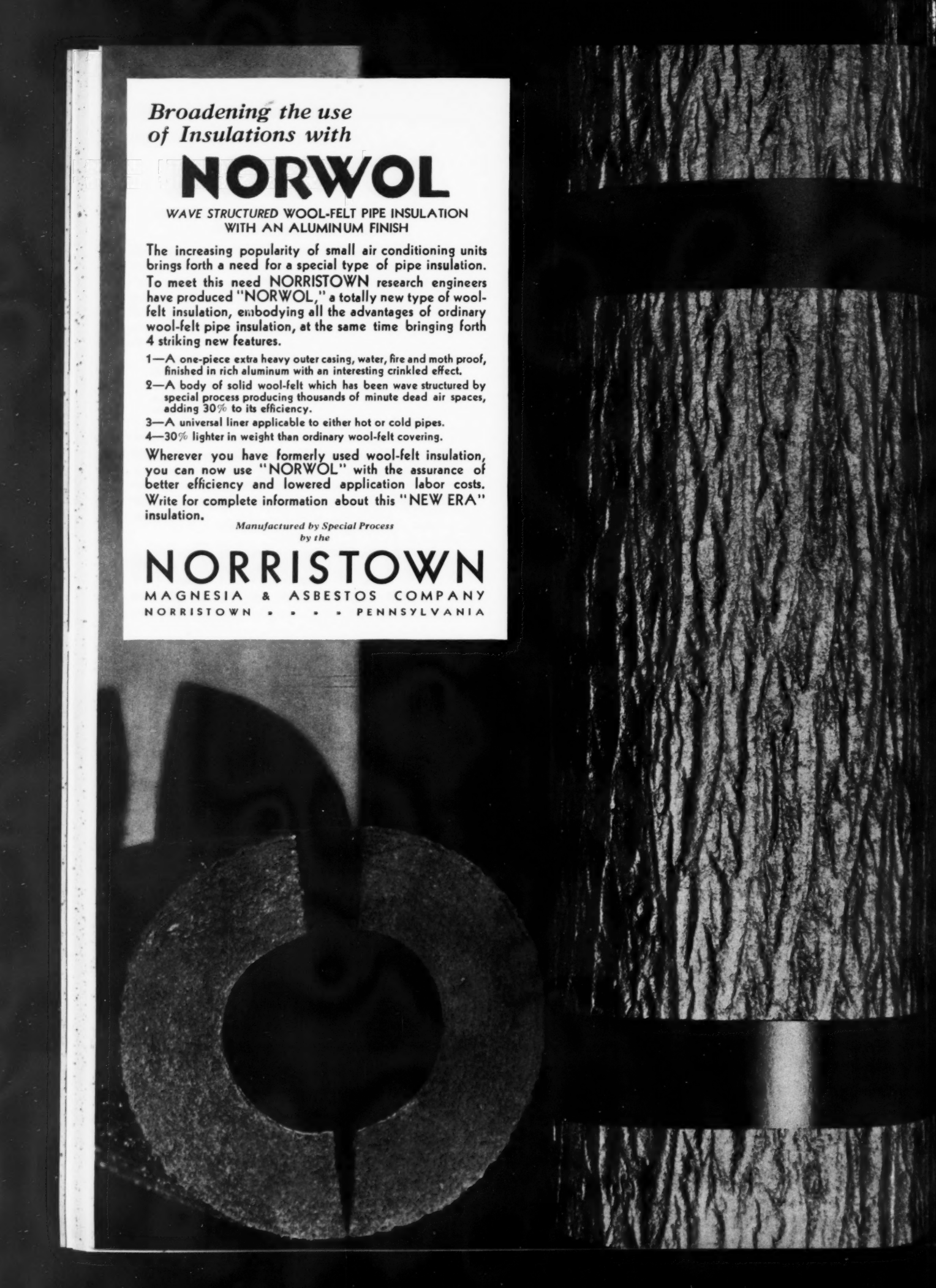

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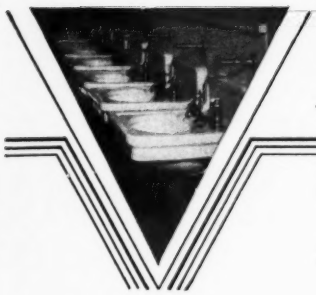


ANSWERED

QUESTIONS FROM OUR READERS AND ANSWERS BY OUR ENGINEERS

Wants Proper Factor for Estimating Radiation

TO THE EDITOR:

We have a table from which to estimate radiation but note that this table is based on a 70 deg. Fahr. difference between the inside and outside temperatures. In this locality we only use 25 deg. Fahr. outside and 70 deg. Fahr. inside making a temperature difference of 45 deg. Fahr. Will you kindly advise the proper factor to use under this condition.

Calif. R. B.

TO THE READER:

In any table of calculated radiation based on 70 deg. Fahr. room temperature and a constant steam or water temperature all that is necessary is to calculate the radiation for 70 deg. Fahr. and zero outside in accordance with the instructions given, and then to divide this amount by 70 and multiply by the actual temperature difference to be maintained which, in this case, is 45 F (70 F—25F). A long as the radiator is kept standing in the same room temperature and supplied with the same temperature of steam or water the heat emission is practically a constant and as the heat required for a 45 deg. Fahr. difference is 45/70 of that required for 70 deg. Fahr. difference, the surface will be directly proportional to the temperature difference to be maintained. Thus for 50 deg. Fahr. difference it would be 50/70 of that for 70 deg. Fahr. difference and for 40 deg. Fahr. it would be 40/70.

The fractions may be changed into decimal factors and become as follows:

For 40 F	0.57 or 57 per cent
For 45 F	0.64 or 64 per cent
For 50 F	0.71 or 71 per cent
For 60 F	0.86 or 86 per cent
For 70 F	1.00 or 100 per cent

When, however, the temperature of the room is changed the above percentages and factors will not hold as the efficiency of the radiator is altered when the surrounding air temperature is modified. It will be appreciated that if a room temperature the same as the radiator is maintained the transmission of heat from the radiator will cease as there must be some temperature difference between the radiator and the air in order to secure any heat transmission at all, and this transmission varies from no Btu. when the room temperature equals that of the radiator up to 240 Btu's per square foot for the difference between 70 deg. Fahr. room temperature and the temperature at 1 lb. of steam pressure. Similarly, when the room temperature goes below 70 deg. Fahr. when the steam temperature goes up to 2 lb., or higher, the efficiency of the radiator increases and more than 240 Btu. will be transmitted.

It is not usual to assume that steam will be over 1 lb. gauge pressure when designing a system, and the additional radiation required for room temperatures above 70 deg. Fahr. is quoted on the back of the radiation table so that all our correspondent has to do is to calculate his radiation for 70 deg. Fahr. exactly as called for making all the allowances noted and then to multiply by the factor of 0.64 in order to make the radiation suitable for a minimum outside temperature of 25 deg. Fahr. If the room is to be kept at a temperature higher than 70 deg. Fahr., this correction should be made by adding 10 per cent for 75 deg. Fahr., 20 per cent for 80 deg. Fahr., 30 per cent for 85 deg. Fahr and so on, before the final use of the factor of 0.64 to reduce the total quantity of radiation to the amount suitable for 25 deg. Fahr. outside.

Troubled with Moisture on Walls and Ice on Windows

TO THE EDITOR:

Herewith you will find sketch of a building (Fig. 1) to be heated with gas, and we would ask you to give us your opinion as to what kind of appliances should be used on this kind of a job. We have tried to heat this building during the past winter with space heaters with very poor results.

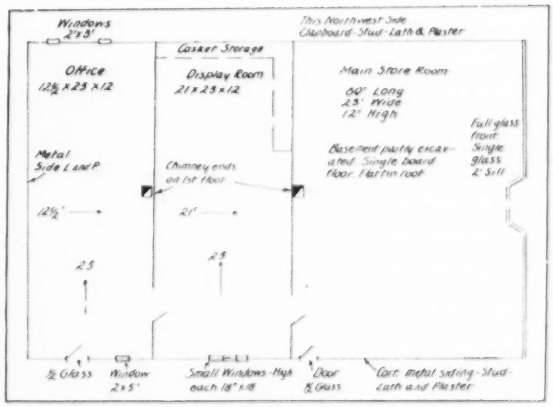
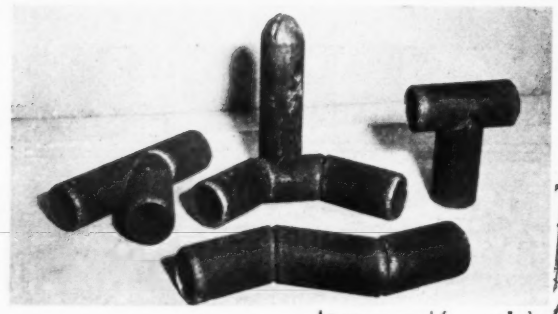
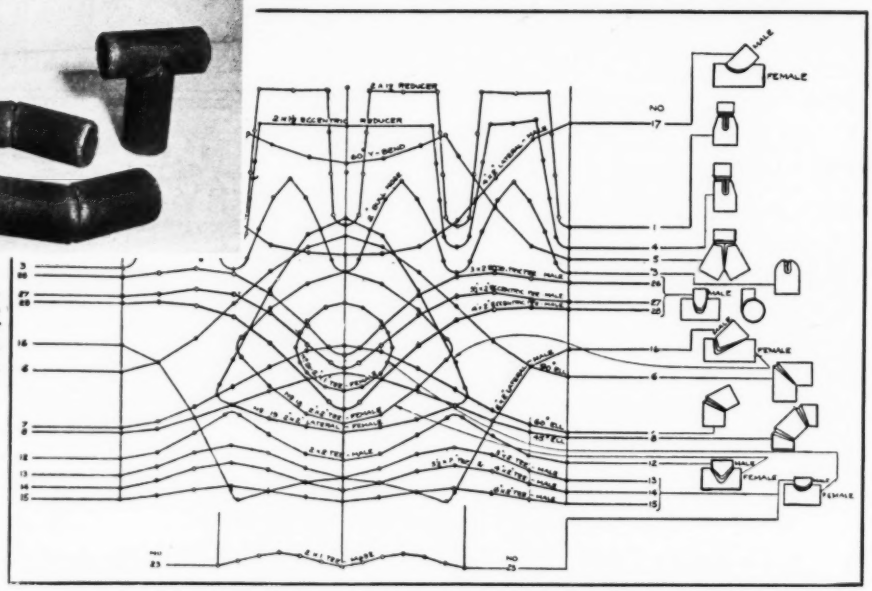

Windows 2'3"
This Northwest Side Clapboard-Stud-Lath & Plaster
Casket Storage
Office 12½ x 23 x 12
Display Room 21 x 23 x 12
Main Store Room 60' Long 23' Wide 12' High
Full glass front Single glass & Sill
Metal Side L and P
Chimney ends on 1st Floor
Basement partly excavated Single board floor Flat tin roof
12½'
21'
23
23
½ Glass
Window 2'x5'
Small Windows-High each 18"x18"
Door ½ Glass
Cast metal siding-Stud-Lath and Plaster

Fig. 1





Examples of the compact, durable fittings that can be made on the job with the aid of AIRCO Templets and an AIRCO Pipe Welding Outfit with Cutting attachment.

Write for this chart of Templets for making 2″ welded fittings

The widespread turn to welded piping has placed on the market a great variety of welding fittings. However, a compact, durable fitting, as strong as the pipe itself, can be fabricated on the job.

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AIRCO Engineers have worked out templets for the making of many different fittings in all sizes of pipe from 2″ to 16″ inclusive. Ordinarily, these templets are given only to users of AIRCO Welding and Cutting Equipment and Supplies, as part of AIRCO Service.

For a limited time, an exception is being made in the case of the chart shown, which contains templets for making 12 different fittings from 2″ pipe. A full size copy of this chart, with complete instructions, will be sent free to any Plumbing and Heating Contractor who requests it. Get a copy and see how easily you can make fittings with these templets to guide you.

For your copy, write to the nearest office listed below.

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One space heater was located in the main room and the other in the office; during the cold part of the season we were bothered with moisture on the walls and ice on the windows. For this reason this method of heating does not prove satisfactory in this case.

Iowa. C. J. G.

TO THE READER:

The sketch submitted is shown in Fig. 1 and indicates an office and display room combined with a large storage room, there being a partially excavated basement under the storage room. The statement is made that an effort has been made to heat this building with space heaters but that this method has proved unsatisfactory owing to condensation and frosting of the windows which occurred during extreme weather. Condensation forming on the walls and frosting on the glass surface is an indication of excessive humidity in the room with the air so saturated with moisture that the dew point of the air is above the surface temperature of the glass and wall so that precipitation is formed. Whether this excessive humidity was caused entirely by the gas, or not, is a debatable question although there is nothing indicated on the plan that would provide a source of moisture which would account for the humidity otherwise.

Our suggestion in this matter is somewhat expensive yet it will insure against the matter of frosting and condensation as much as any system of heating could, and this is to install a gas fired hot water boiler in the main store room at point marked "A" making this boiler of sufficient size to carry the whole building. Then to install an open or closed type of hot water heating with the radiators set on the floor and an overhead supply main with the return carried back under the floor if practical. This boiler would be set in the excavated portion of the basement and the smoke pipe would have to be brought up through the main store room and then

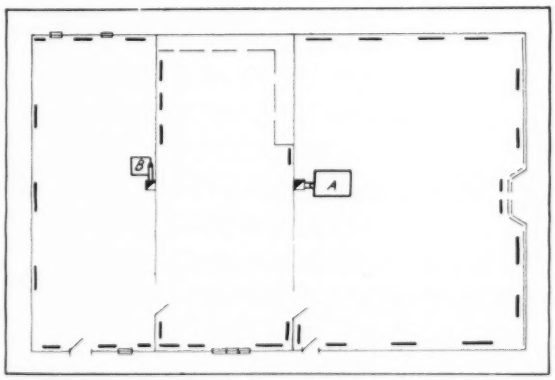

Fig. 2

connected into the chimney, as the chimney does not extend below the 1st floor level.

The radiators may be placed around the walls approximately as indicated in Fig. 2 and should be adequate to care for each room. Our correspondent has failed to tell us what his minimum outside temperature is so that we are unable to calculate his radiators. If necessary, the boiler could be placed in the main store room on the first floor level and a small circulating device used to rotate the water around the system. Should the chimney prove too small to carry gas boiler of sufficient size for the whole building a second boiler could be located at point in office marked "B" and part of the load taken by the second boiler. If our correspondent desires to advise us as to the minimum outside temperature he wishes to heat for and the size of the chimneys we would be glad to size up his radiators and piping.

It will be seen that in such an arrangement any condensation, occurring with the use of gas, has an opportunity to pass up the chimney and does not enter the air in the room; this should effectually dispose of the difficulty of condensation and frosting.

How to Heat a Building by a Boiler in the Basement of an Adjoining Building

TO THE EDITOR:

Could you inform us as to how to go about heating a building having a store and apartments above from the boiler in a larger building about 25 ft. distant? The sys-

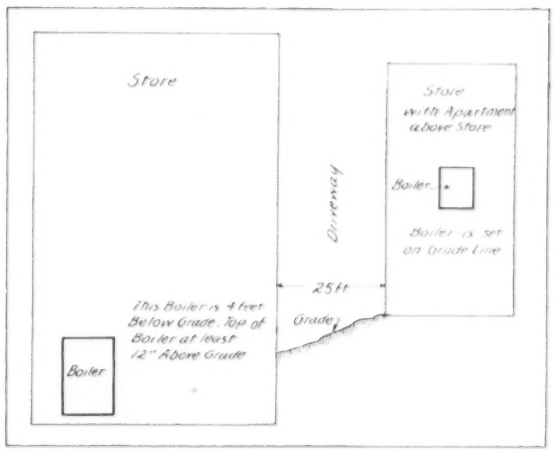

Fig. 1

tem is gravity hot water and the top of the boiler to which it is desired to connect is 12 in. higher than the grade between the two buildings so that any buried lines would have to be below the top of the boiler.

A small plot plan of the two buildings is given in Fig. 1, and we have been wondering if we could start at the boiler in the large building and grade a line down from this point so as to pass under grade and come out in the small building at a lower level bringing back a small return with a check valve. Possibly an electric circulating device might be used. What is your opinion?

New Jersey. R. P. H.

TO THE READER:

As we understand our correspondent's problem, the conditions are about as shown in Fig. 2, and the idea is

to connect both buildings to the single boiler now in the large building. We assume that our correspondent already has checked up and has found that this boiler is amply large to carry the small building plus the loss in the lines between the two buildings. If this is correct, then all that remains to be done is to work out a piping

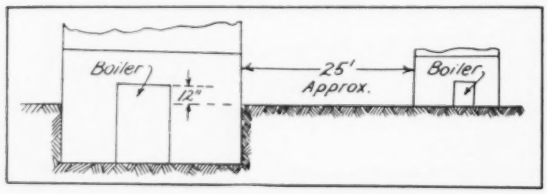

Fig. 2

scheme, which will be feasible so as to connect both systems onto the large building boiler.

Our correspondent's suggestion of pitching a line down from the big boiler over towards the small building so as to pass under grade can be done provided a vent is provided at the high point in the main over the large boiler and, of course, a pit or depression will have to be built

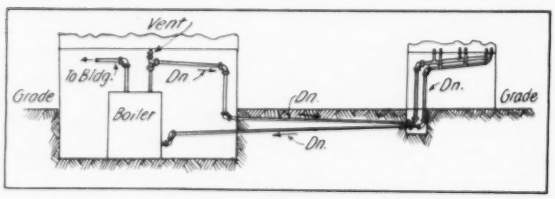

Fig. 3

under the floor of the small building in which the cross connecting lines can terminate and to provide for expansion. The return circulation must be the same size as the supply line and a check valve would only retard what circulation might be obtained by this means of connecting up. As to how much circulation would be obtained with this scheme, which is illustrated in Fig. 3, a great

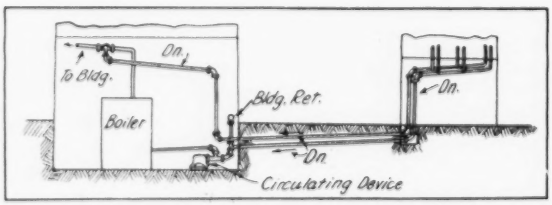

Fig. 4

deal would depend on the height the radiation was above the boiler in the small building. We suppose that the small building has a store on the grade level and, if so, that this store would require to be heated. If this is true, we cannot recommend the above method of connecting the buildings together as it would be likely that the radiators at grade would be short circuited by the radiators higher up and that the store would be cold.

Excellent results can be secured, however, if a small circulating device is used on the return line from both buildings and few simple directions followed out. Referring to Fig. 4, it will be seen that the branch to the small building is taken off of the line supplying the large building (on the side), so that any air collecting in this high portion of the pipe will work its way out through the system in the large building. In other words, an automatic air vent is provided. Then the line arbitrarily is dropped down to the proper level to pass under the grade and is pitched upward away from the boiler as it passes from one building to the other; when the line reaches the small building it rises up and distributes on the ground floor ceiling still pitching up away from the boiler.

The return follows the same routing and pitches in the same direction until it reaches the main building, where it unites with the return from the main building, and the combined line is connected to a circulating device and then to the return connections on the boiler. With this arrangement, air valves must be provided on the radiators in the small building, and it is assumed that these already are taken care of in the present system. The reason that the returns from both buildings are connected together before going through the circulating device is because unless this is done the circulating device might rob the main building in preference for the small building whereas, if both buildings are connected through the circulating device, they both will receive the beneficial effects of the accelerated flow.

Control valves should be placed on both supply and return branches just beyond the point where they split so as to be able to shut off either building in case of emergency and also to serve as circulation controls.

About the Distance Between the Water Line and the Dry Return in a Boiler

TO THE EDITOR:

Will you please give me the minimum distance for good practice between the water line on a boiler and the dry return line—that is at the end of the main? How high should the header be on a one-pipe system before the reducing ell is put on to run over to the main? Would you recommend an equalizer on steam jobs when using a square boiler with two feed outlets when your header is 18 in., or less? I should be glad to obtain a book dealing with such items.

New Jersey. S. S. E.

TO THE READER:

This evidently is an enquiry in which all the questions refer to the well known one-pipe system of gravity steam heating. The first question in regard to the height that the far end of the steam main or the low point of the dry return main should be kept above the boiler water line is generally considered to be 18 in. for good practice, but there is no hard and fast rule for this. For example a steam main or a steam and return main with an unusually long run will require a greater distance between the water line and the lowest point on the main

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than where the run is shorter. But again if the pipe is sized liberally the distance may be reduced between the low point and the boiler water line, owing to the fact that the pressure drop in the larger pipe will not be as great as in the smaller. Any system can be calculated by remembering that the water in the return pipe will rise above the boiler water line about 2 in. for every ounce loss occurring in the steam main and then sizing the steam and return mains on the basis of the drop in pressure allowable.

The easiest way to do this is to take the distance along the pipe from the boiler outlet to the low point of the main, double this for fittings, and obtain the approximate equivalent length of run. Then take the distance between the boiler water line and the low point of the main, subtract 4 in. and divide by 2, which will give the total ounces allowable drop in pressure in ounces. Then use a table for pipe sizing based on that number of ounces for the equivalent length of run. Thus, what table of pipe sizing should be used where there is only 12 in. between the boiler water line and the lowest point on the main if the distance from the boiler steam outlet along the pipe to this low point is 200 ft.? Solution: Length of Run . . . 200 ft. Equivalent length of run is double this, or 400 ft. Distance between boiler water line and low point of main is 12 in., and subtracting 4 in., leaves 8 in., or 8/2 which is 4 oz., the total allowable drop. Therefore if a pipe sizing table based on 4 oz., drop per 400 ft. of run is used, there will be a distance of 4 in. between the high level of the water in the return and the low point of the pipe.

In regard to the height to which the header should be raised before putting on the reducing ell to run out to the main, this is a question on which no hard and fast rule can be given; usually it is made as high as the boiler room ceiling will permit and 5 ft. is considered a good minimum figure.

Concerning the use of an equalizer, it is not apparent why this would be necessary or advisable unless an underwriters' loop were used on the return in which case it must, of course, be used.

If our correspondent will read the series of articles now appearing in our pages entitled, "Heating Residences and Small Structures" he will find the questions which he has asked discussed in detail along with many others.

Can You Answer These Questions?

A Question and Its Answer

The following question was asked in the June issue, and the following answer is by a reader:

A pump is required to deliver 200 g.p.m. of water through a 3-in. pipe from a lake to an elevated tank for a summer hotel. The water level in the tank is 75 ft. above the pump and the lake level is 5 ft., below the pump; what would be the approximate total head on the pump if the pipe is 250 ft. long and has six 90 deg. elbows and one check valve?

THE total head against which any pump must deliver is made up of the items of static head (or vertical distance which the water must be lifted) and the friction head, or rubbing of the water on the sides of the pipe, as it passes through, combined with the resistance offered by valves, fittings, etc. The static head consists of the vertical distance from the water level at the source from which the pump draws its supply to the highest point to which the water must be raised. In this case this vertical distance amounts to

On pump suction	5 ft.
On pump discharge	75 ft.
Total static head	80 ft.

The friction head is more difficult to calculate, as it varies with the velocity of flow, the number of fittings, condition of the interior of the pipe and so on. The first thing to do is to determine the resistance of the valves and fittings; these are generally taken in the number of feet of straight pipe which would have the same resistance as the fitting and, looking up 3 in., 90 deg. elbows in a fitting friction table, it is found that one elbow will introduce as much friction as about 12 ft. of straight 3-in. pipe, so that the use of 6 elbows is equivalent to adding 12 ft. by 6 or 72 ft. onto the length of the straight pipe, while the check valve is found to be rated at about equivalent to an elbow which introduces another 12 ft. of equivalent length of run on the line.

It will now be seen that the actual run of 250 ft. of 3-in. pipe has been increased as far as friction is concerned to a run of

Straight pipe	250 ft.
6 elbows at 12 ft	72 ft.
1 check valve at 12 ft	12 ft.
Total equivalent length of run	334 ft.

In other words, a 3-in. pipe 334 ft. long will have approximately the same friction as a 3-in. pipe 250 ft. long and containing 6 elbows and one check valve.

The next step is to find out what the friction in 3-in. pipe will be per 100 ft., with a delivery of 200 g.p.m., and looking this up in pipe friction tables gives a result of about 5.02 lb. drop per 100 ft. Changing this to feet of head by dividing by 0.43 (since every foot of head generates only 0.43 lb. per sq. in.) gives 5.02/0.43 or 11.67 ft. per 100 ft. of run.

But there is an equivalent run of 334 ft., so this loss in 100 ft., must be divided by 100 to get the loss per ft., and multiplied by 334 to get the total loss on the line, or

$$\frac{11.67 \times 334}{100} \text{ or } 38.98 \text{ ft.}$$

Then the gravity head and the friction head must be combined into a total head by adding the two heads together giving

Static Head	80	ft.
Friction Head	38.98	ft.
Total Head	118.98	ft.,

which is not quite the whole story owing to the fact there are one or two small losses which have been neglected such as a loss for the water entering the suction inlet, the inertia of starting the water into movement and so on; but these are all so small that slight addition onto the head, calculated by the above method, will cover these minor items and in this case I would use a pump good for about 125 ft. of head to allow for variation in pipe friction, corrosion and the small items not considered in the calculations.

How Would You Answer This Question?

How large a street water connection would you install for a 50-family apartment house of 4 stories with flush valve water closets, if the building is to be placed on direct pressure and the street water pressure is 60 lb.?

Answers based upon your experience, and suitable, will be paid for and published in the October issue.

Tourists—

(Continued from Page 55)

above ground shall be of cast-iron, galvanized wrought iron or steel, lead or brass, approved standards.

Others of the sections referred to are the following:

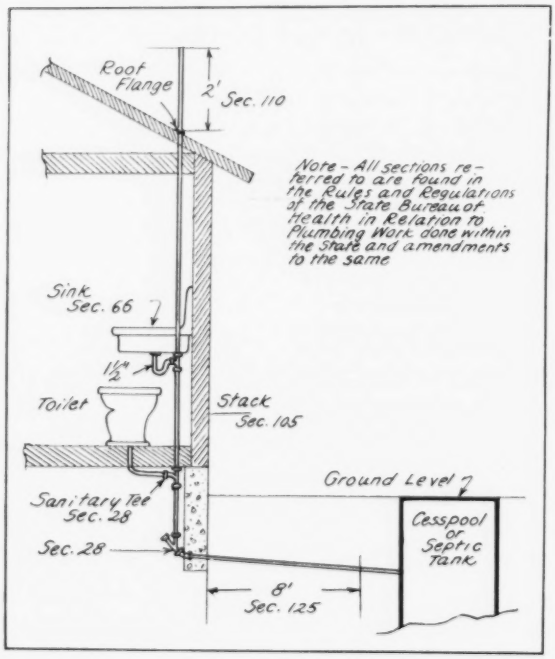

Roof Flange
2'
Sec. 110
Note - All sections referred to are found in the Rules and Regulations of the State Bureau of Health in Relation to Plumbing Work done within the State and amendments to the same
Sink Sec. 66
1½"
Toilet
Stack Sec. 105
Ground Level
Sanitary Tee Sec. 28
Sec. 28
Cesspool or Septic Tank
8'
Sec. 125

Fig. 4—In this illustration, the hook-up of a lavatory and sink is shown. As in the case of the connections of Fig. 2, these are specified by the state plumbing regulations and represent a model installation

28. Change in direction. All changes in direction shall be made by the appropriate use of 45 deg. wyes, half wyes, long sweep quarterbends, sixth, eighth, or sixteenth bends, except that single or double sanitary tees may be used on vertical stacks, and short quarter bends may be used in soil and waste lines where the change in direction of flow is from the horizontal to the vertical. Tees, crosses and short quarter-bends may be used in vent pipes.

110. Roof extensions. All roof extensions of soil and waste stacks shall be run full size at least two (2) feet above the roof, and when the roof is used for other purposes than weather protection such extension shall not be less than five (5) feet above the roof.

When there is danger of frost closure, no roof extension shall be less than four (4) inches in diameter. Changes in diameter shall be made by use of a long increase at least one (1) foot below the roof, and where access to the roof is difficult a test opening shall be provided at this point.

105. Soil and waste stacks. Every building in which plumbing fixtures are installed shall have a soil or waste stack, or stacks, extending full size through the roof.

It is our belief that the State of Maine is handling the sanitation of its camps, tourits' homes and roadside stands in a most efficient manner.

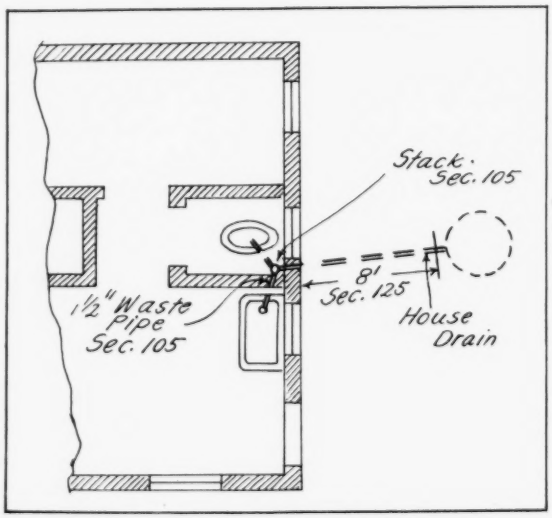
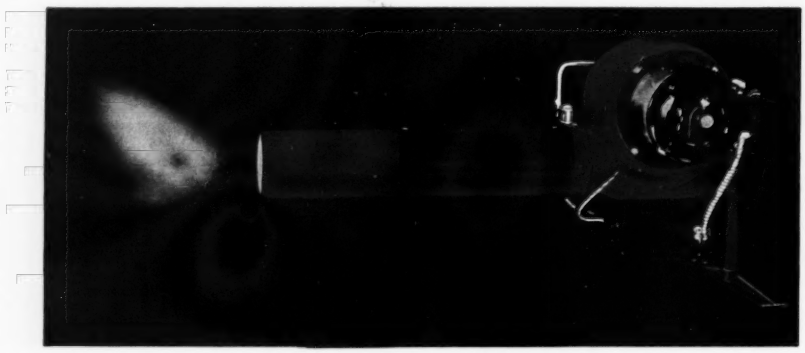


Fig. 5—Plan of the installation shown in Fig. 4 which includes only a water closet and a sink

AN EDITORIAL SECTION

AUTOMATIC HEAT SECTION

Cakes *and* Combustion *Again* Silent Glow solves a problem



***Silent Glow Model 1000**—Remarkably compact and free from unnecessary gadgets. All fittings are chromium plated. The burner is available in various color combinations.*

To supply even, steady heat for baking cakes 24 hours a day, 6 days a week, was the problem faced by one of the world's largest bakeries located in Chicago. Using a rotary oven of the type where the flame is in direct contact with the baking chamber necessitated a *clean, odorless, steady* flame without any possibility of the slightest interruption. The Silent Glow Model 1000 was installed and answered the need. The exclusive Silent Glow stabilizor and adaptor ring with which this model is equipped insures the stabilized flame that permits it to burn oil completely in suspension.

There are definite reasons why the engineers of this bakery turned to Silent Glow. They know that the Silent Glow Oil Burner Corporation has the most complete line of oil burners on the market. That regardless of the job, there is a Silent Glow that will exactly meet the specifications—and without forcing a burner beyond its capacity or resorting to makeshift installations. In addition they knew that only a burner built with such precision as characterizes Silent Glow products, could operate steadily without service or adjustment under such abnormal conditions.

Remember when you sell Silent Glow, you have the backing of the manufacturer of the largest number of oil burning devices in the world. Write today for particulars on the Silent Glow franchise.

THE SILENT GLOW
OIL BURNER CORPORATION

HARTFORD, CONN.

Boston **Chicago** **St. Paul**

Member National Electric Light Assn.
Member American Oil Burner Assn., Inc.
Member Oil Heating Institute
Member Distillate Burner Manufacturers Assn.
Member National Fire Prevention Assn.

In Canada
SILENT GLOW OIL BURNER CORP., LTD.
162 St. Catherine St., W., Montreal, P. Q.

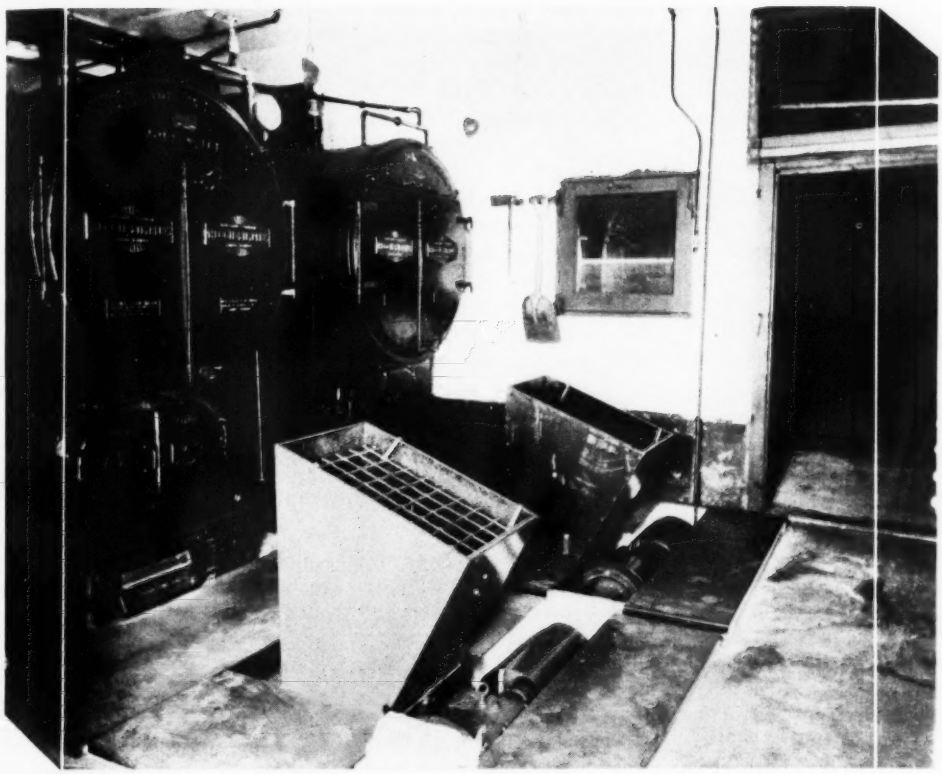


Fig. 1—As a result of installing the stokers shown here, the fireman was shifted from the operating expense account to production and his usefulness to his company was extended

Human Appeal and Engineering Sold These Stokers

By B. C. McCLURE

ONE of our recent experiences concerns an old man who was true to his employer and continually watchful of his interests. He had spent a life-time in the boiler room to the end that, when we met him, his strength was ebbing daily, eyes dimming, but his interest in his duty was as strong as a man of twenty. It was this man—the fireman—whom we had to approach and sell before we could get to the source of buying power. No stoker dealer before had crossed the threshhold. Here was a man accustomed to hand firing and satisfied; a man of perhaps seventy summers who conscientiously believed the stoker was merely a makeshift and desired only by the lazy indifferent fireman. To win this man over required tact and diplomacy. Yet by a process of reasoning we succeeded by easy stages in selling him the stoker idea—to a degree that he permitted us to pass on to the purchasing department, not with a direct recommendation for its adoption, but that he was willing to be shown.

Here was a factory building, modern in design, with a very fine and clean boiler room, two boilers, sky lights, and a means of ventilation. It was the opportunity we were looking for. These boilers were fired daily, furnishing heat for the employes in winter and furnishing hot water for plating and heat for drying ovens the year around. This fireman was one of those energetic fellows who not only fired, but also did many other duties around the plant. In his enthusiasm in doing other work he frequently overlooked the steam gage and often the factory departments found it necessary to call in for steam.

CONSTANT PRESSURE OF IMPORTANCE

This was one of the first appeals which went home—that after the stokers were installed the pressure would always be constant without variation. Also that the smoke and soot nuisance (it being located in a residential section) would be completely abated and that the same tonnage of coal would reach further and could

AUTOMATIC HEAT SECTION

be purchased for a less expenditure. Ultimately the sale was consummated. The stokers arrived and were immediately installed, observing the correct setting height. The cast foundation was thoroughly protected and securely anchored. The ash pit door was baffled and used as the firing door. Low water protection was afforded and the unit operated by day on steam pressure with a two pole switch placing it in series with a stack control for night periods in order to keep the fire in. A draft regulator for the checks used was synchronized so as to close first, after which the stoker started. Then, after the stoker stopped as a result of the pressure being attained, the checks again were opened. Pits were curbed and supplied with drains to the sewer. Also they were covered partially with steel plates.

PLANT OPERATED SATISFACTORILY

The plant was started and everything worked beautifully. Every promise was more than fulfilled. Our fireman was soon converted from doubt to positiveness; his check on coal consumption as compared with hand firing showed a net saving of 50 per cent which exceeded our estimates and a savings of 50 cents per ton in fuel was effected. The ash accumulation decreased 80 per cent, no smoke was visible and the flues were cleaned only once each week instead of once each day.

The greatest source of satisfaction to this fireman was his transition from the operating expense account to production. He was now able to devote 90 per cent of his time to the building of containers for the shipment of the wares of his employer's plant. "You have now eliminated me as an overhead expense and I am now in production," he said. "With this convenience I really think I shall be able to last several years longer." We hope so and so do his employers. This man, conscientious, energetic, honest, capable and qualified, has been encouraged as a result of these changes. This boiler room and stoker installation are illustrated in Fig. 1.

We have just recently completed an installation in a dry cleaning plant using a drum type high pressure boiler. This plant is illustrated in Fig. 2. It was necessary to raise this boiler and put it on a concrete base 8 in. in height to secure the proper combustion space. The base was turned so as to keep the stoker away from the fire doors. This boiler had a diameter of only 22 in. and a 10 in. stack, 36 ft. in height. The plant is completely automatic with a return pump and with low water fuse protection. The stoker is operated with a high pressure control, thus maintaining 60 lb. of live steam at all times with a two pole switch throwing the stack control in series for night or holiday firing. A draft control was inserted in the stack to equalize the stack differential. This plant was operated for 30 days on $9.00 worth of coal. Two wheel barrows of clinkers were collected in this period and the general operating cost was reduced over $20.00 the first month. Efficiency in the cleaning plant was increased since a uniform pressure, so essential in this class of work, with dry steam was maintained at all times.

ONE HUNDRD FIFTY JOBS SOLD

This owner is wondering why he did not install this equipment two years ago. And, so it is with the 150 owners we have sold this equipment to in the last three years. Observance of the laws of combustion, careful, painstaking and neat workmanship, proper controls selected after a study of the requirements of that plant, co-operation in the selection of fuel, courtesy and a spirit of assistance to those in charge of the equipment have made our stoker work a satisfaction to the purchaser and a source of deep satisfaction for ourselves.

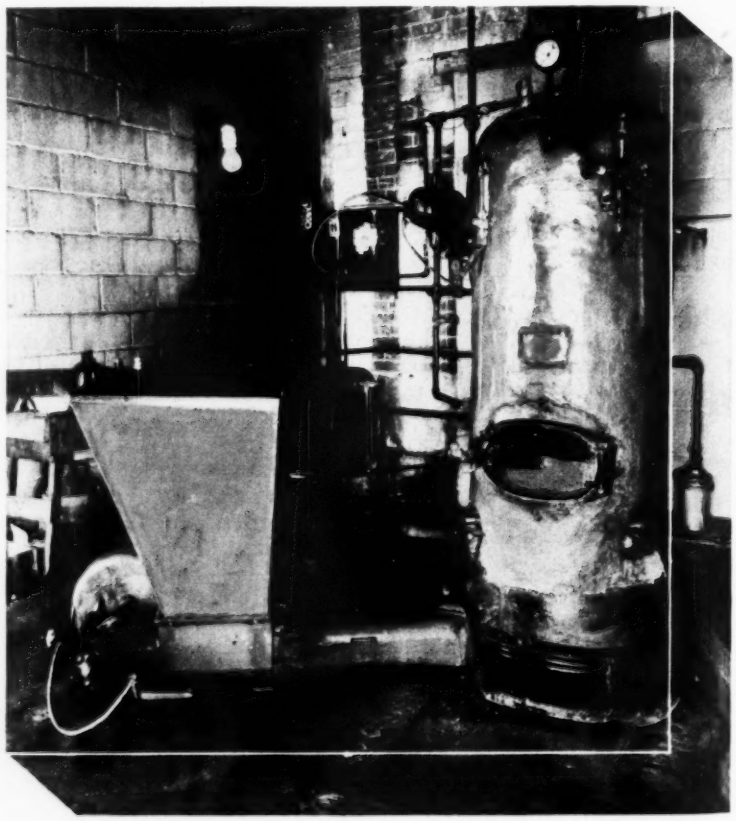
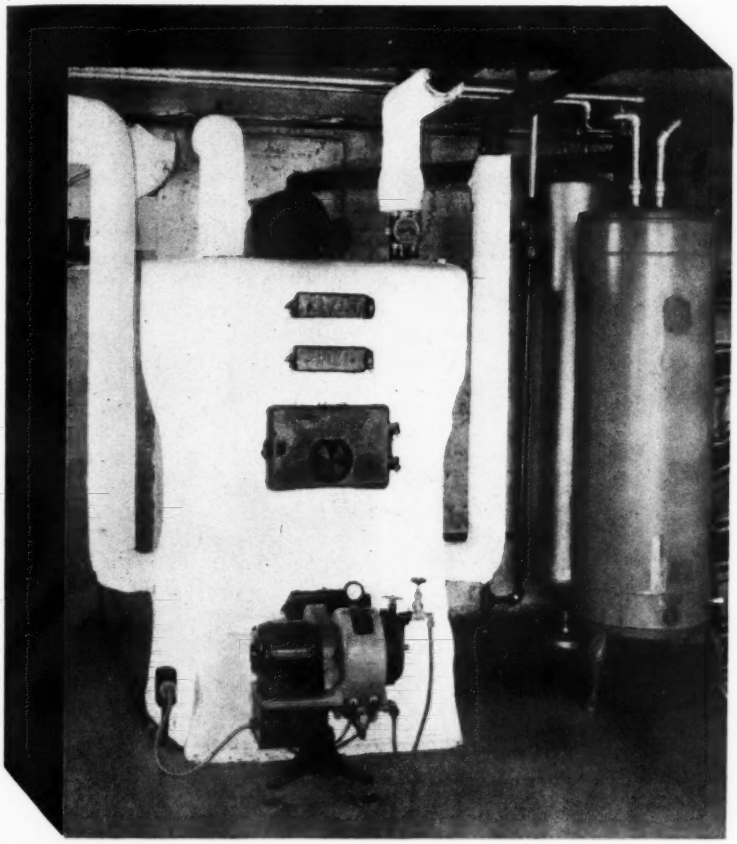


Fig. 2 — This high pressure steam boiler was raised to accommodate the installation of the stoker. Note that the stoker was placed so as not to obstruct the boiler openings



This boiler is now doing a satisfactory job with the oil burner. Domestic hot water is preheated for the range boiler

"... more mistakes are made in the combustion field today than in any other field of like importance," said this oil burner dealer, in an interview on

Successful Oil Burner Installations

"LACK of a proper knowledge of combustion," says John S. Peoples, president of the Kewanee Engineering Corporation of Oak Park, Ill., "causes trouble with many oil burner installations. You can take a hundred oil burners and they will do pretty much the same job, if they are properly installed."

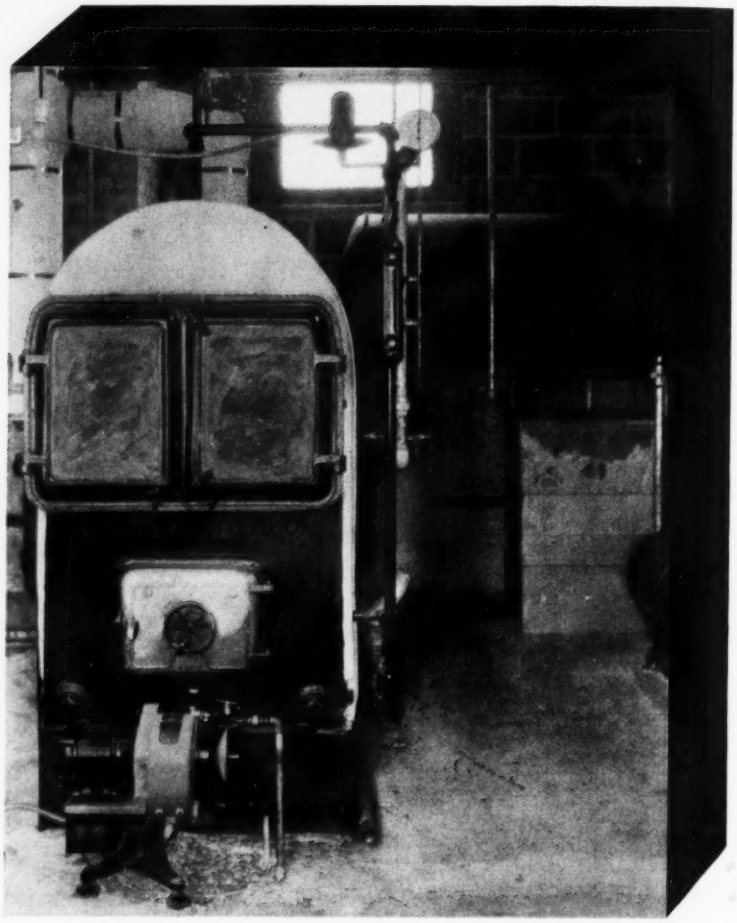
On this matter of combustion knowledge and correct installation Mr. Peoples bases not only the success of the thirteen hundred or so jobs they have sold, but his sales tactics in contacting new prospects for oil burner installations.

In indicating his willingness to be interviewed, Mr. Peoples said: "If we can do anything to help the game along, we're glad to—and if there is a greater spread of the fact that correct combustion principles must be followed to make successful installations, that should make things better all around."

Mr. Peoples' convictions in this matter arise out of the fact that complaints about oil burners have often been wrongly directed against the burners that were installed, when it was merely a matter of failure to understand what it is that will assure complete combustion and keep fuel costs down.

It is significant that, on the day the representative of DOMESTIC ENGINEERING visited Mr. Peoples, a burner job was being installed for one of the country's largest oil corporations. It is not the first one for this corporation. These installations came about by reason of complaints made to the corporation about one of its trade marked brands of oil. As the company investigated these complaints, it uncovered the fact that the Kewanee people were recommending the use of this oil; and that there had been no complaints from their jobs where the oil was used. They asked why; and two of the cor-

AUTOMATIC HEAT SECTION



This boiler room is kept locked because the burner runs practically all year without attention

poration's experts visited at the Kewanee Enginering Corporation's office, heard Mr. Peoples' views as to correct installations, and were convinced that he was right. Hence they entrust to him the installation of these burners.

Mr. Peoples cited several instances to show the results achieved under their method of installation. There is one school job, where the burner takes care of the heating needs and of the hot water supply. The principal of this school has the key to the boiler room, which is always locked, because the job needed no janitor or other attendant, running the entire year with practically no attention.

Let's follow the interview as it developed from this point. Going back to his views on combustion, Mr. Peoples said: "More mistakes are made in the combustion field today than in any other field of like importance, and there are bigger opportunities for improvements there than in any other field.

"In burning any fuel, you require so much oxygen to produce a certain quantity of heat. You obtain that oxygen from the atmospheric air that is put through the system. Generally men guess at the quantity of air—they do not measure it and have no adequate knowledge of how much air they are putting through the combustion space. The result is that they are almost always putting through too much. We use a draft gauge, and an automatic check damper or flutter damper on our jobs.

TOO MUCH AIR

"I go to job after job and find up to ten times as much air as should be going through the system. Take one job—in a two-flat building. That building has had three different owners in ten years. The fuel bill was around $500 for a winter—the burner being about ten years old.

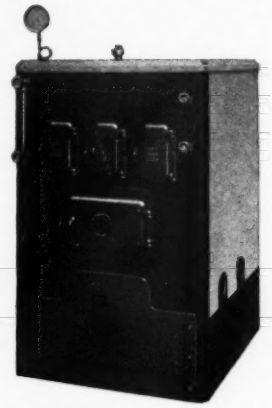
"That boiler used to shudder and shake so that you could feel it all through the building. They had to shove the thermostat up to 90, and then take what they could get, because the boiler never was as hot as it should have been. The reason was—too much air. The first thing I did was take the cleanout door off the base of the chimney, leaving the opening of about ten by twelve inches as a check in the chimney. The fire swelled way up, and I had to cut the oil down until I got a proper flame again. Still the job would not heat. Next I opened the check on top of the boiler. There was another swelling of the fire, and once more I cut down

Note the brick work advised by this dealer for use with conical flame. Slightly smaller than the flame, the brick works keeps turning it back upon itself. The result is good combustion

AUTOMATIC HEAT SECTION

Burnham Oil-Burning Boilers

Would you send a Boy to do a Man's work? or the Boss to handle the Helper's job?

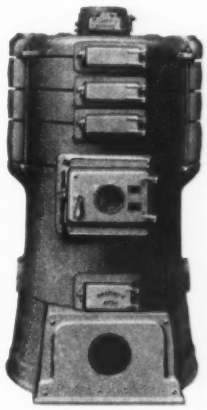


Burnham Square Jacketed Boiler for Oil-Burning.

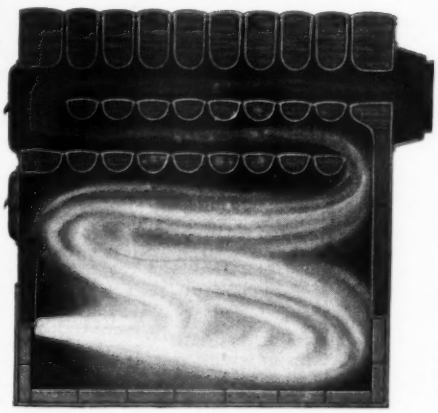
OF course you wouldn't send a boy to do a man's work. Or waste the boss's time on the helper's job.

That's why we make over 60 sizes of round and square Burnham Boilers for use with oil burners—each one for a *specific* job, with no compromise to help it do some other job. If it's a 1700 ft. job to be done, you don't get a 1200 ft. Burnham with the suggestion that you make it overwork. And if it's only a 600 ft. job, you don't get a 1200 ft. Burnham.

We know of no substitute for having *enough water heating surface* in the boiler. Nothing is more important than the right proportion of heating surface and water content to radiation requirements.



Six Section Oil-Burning Round Burnham Boiler.



Cross-Section of Square Boiler for Oil-Burning. Works equally as well with Rotary type burner.

It's the Long Fire Travel that Makes a Short Fuel Bill

We know of no substitute for the "long fire travel that makes a short fuel bill," introduced a half-century ago by us and since improved continuously.

And, as always, Burnham Boilers for oil-burning are made of cast iron, the Metal Eternal. They have a low, snug, compact design, giving ample headroom.

Round Burnhams come in 6 series and 24 sizes, Square Burnhams in 5 series and 39 sizes, for steam, vapor or hot water.

Stick to Burnham Boilers for Oil Burning. Give your customer *just the right size* for his or her job. You'll earn their thanks and have a satisfied buyer.

Cross-Section of Round Boiler for Oil-Burning. Works equally as well with gun type burner.

Burnham Boiler Corporation

Irvington-on-Hudson, N. Y.

Representatives in all Principal Cities of the United States and Canada

Burnham Boiler Corp.
Irvington-on-Hudson, New York

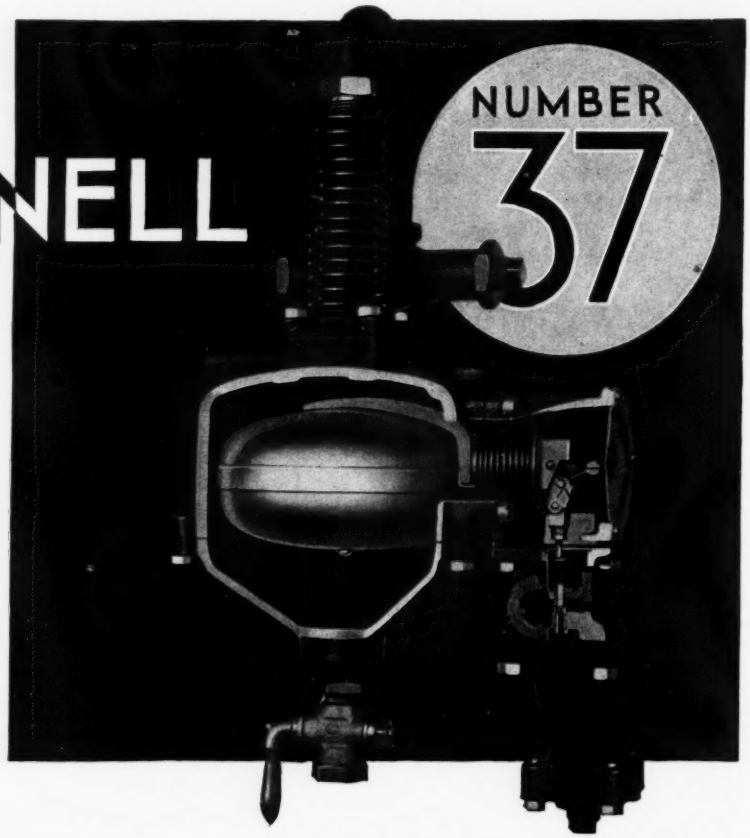
Send me information on Burnham Oil-Burning Boilers, as advertised in Domestic Engineering.

.....**name**

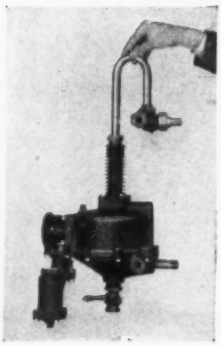
.....**address**

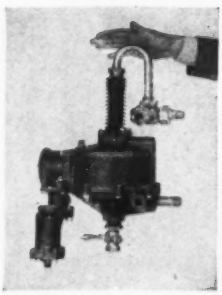
AUTOMATIC HEAT SECTION

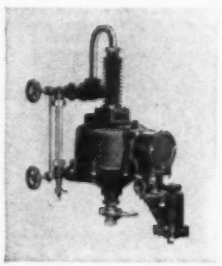
McDONNELL NUMBER 37



Which?







The two upper illustrations show how the goose-neck on the feeder is moved to fit all standard gauge glass lengths used on small boilers. After feeder is installed, gauge glass is installed *on feeder* as shown in the lower illustration. It is then a simple matter to connect water piping.

NOTE
THESE EXCLUSIVE FEATURES:

(1) *The cause of trouble is eliminated.* The cool feed valve prevents scale and lime formation. Where there is no scale, there can be no sticking or binding of the feed valve.

(2) *Quick hook-up feature* cuts installation time from hours to minutes.

(3) *Cut-off point is automatically located* and float chamber *must* duplicate gauge glass conditions.

(4) *Ideal for oil-fired boilers.* The No. 35 low water cut-off switch can be added, when desired, in two minutes.

(5) *Unconditionally guaranteed,* so that you can pass this guaranty on to your customer.

»»a *cheap* feeder?...or a feeder cheap?

(There's a vast difference)

HERE, at last, is a feeder of McDonnell dependability at a price easily within reach of the small-boiler owner.

It is a quality feeder in every sense—a feeder with the basic features of the McDonnell "30 Series"—the cool feed valve, the packless construction, the hardened stainless steel valve, and other features that have made the "30 Series" so dependable.

But even more important is the quick hook-up feature which cuts your labor costs to a point where you can sell this quality feeder, *installed,* at a much lower price than that of feeders in which you would have far less confidence.

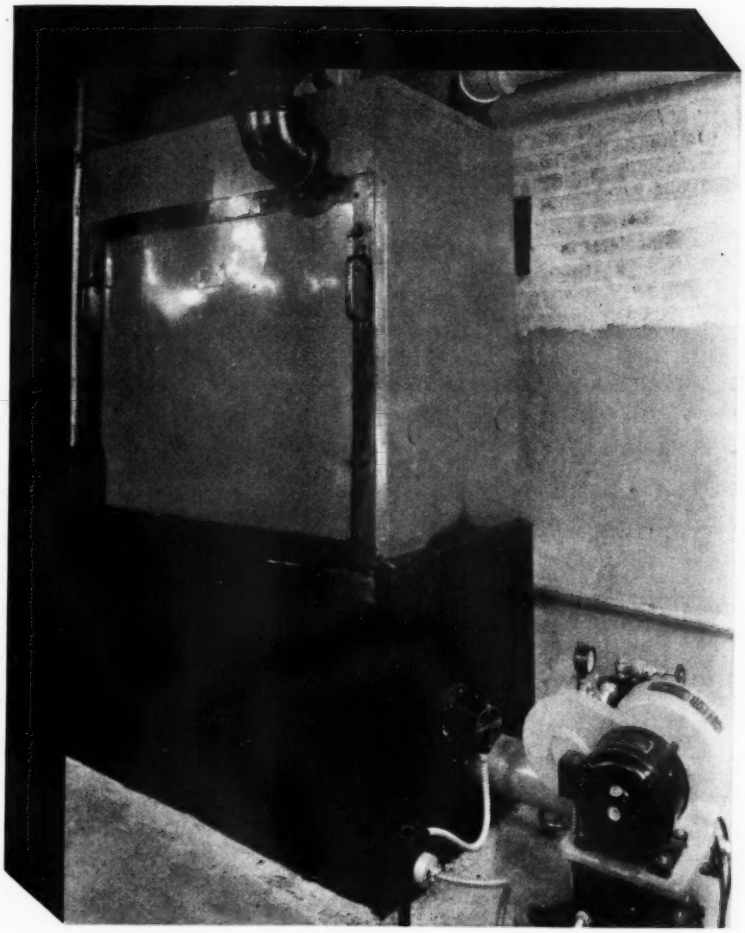
Yes, there's a big difference between installing a "cheap" feeder and installing a *good* feeder *economically!*

By far the greatest market for automatic boiler water level control lies in the less-than-2500 feet field. The No. 37 opens up this vast market, and when combined with the No. 35 Low-water Cut-off Switch, or the No. 36 combined Pressure Control and Cut-off, it becomes an almost sure-fire sale for every oil-fired or stoker-fired job, old or new.

Study the simple hook-up. Remember that we supply you with data books, dealer helps, and sales-building cooperation that has won thousands of friends and boosters among contractors. Now is the time to cash in on the No. 37.

McDONNELL & MILLER
400 N. Michigan Ave. Chicago, Illinois

McDONNELL automatic boiler water level CONTROL



An oil burner installed under a boiler built to use gas. It is giving satisfactory service with the burner

the fuel. Then I looked under the air tube in the ash pit and found that there was a hole bigger than my hand for secondary air. They did not need it. I filled the hole with a brick, and the fire swelled up again. Again I cut down the oil.

"Still I wasn't getting the results I wanted. Upon looking at the fan housing I found that the shutters that regulate the air had been taken away and the fan was taking all the air it could get. I closed up those openings and the fire swelled up again and once more I had to cut down the oil. The burner now was almost entirely quiet and the fire was beginning to look like something. The boiler was beginning to warm up, and pretty soon the people came down to say that it was too hot—that the thermometer showed 85°.

"The result was that the next winter they burned only $250 worth of oil, a clear saving of fifty per cent. They had had fifteen service men and paid for eight or ten service calls a year. Now they have one call a year and the burner is working satisfactorily.

"It's an extreme case, of course," admitted Mr. Peoples. "Because of a strong chimney, and because the air chilled the fire and made it smoky, the service men thought they did not have enough air and kept putting more into the combustion chamber.

"There was another job in one of the other western suburbs. We were asked to look it over. When the man we sent came back after having been instructed to measure the air over the flame he said, 'Do you know how much draft I found?' I had instructed him to take the reading because, from the description of their trouble, that seemed to be the trouble. I made a guess that our service man had found .20. As a matter of fact, his reading had been .33. He had opened the check and reduced the draft to .07, and if he could have made it .04 it would have been better still.

"In a rough way you can get an idea of when you have too much draft. You should not have enough so that it will suck out a match held over the fire door. It's merely a matter of experience."

Here is the brick work advised by the dealer for use with the gun-type burner. Note how the fire chamber conforms to the shape of the flame. This dealer also advises as much height as can be obtained

All of this was by way of introduction to what Mr. Peoples considers the error most frequently made in building up the combustion chamber for the use of an oil burner. "One of the biggest mistakes you will find in the field," he said, "is the rectangular shape of the fire box. We have found that the fire box should fit the shape of the flame. If you have a conical flame, then build your combustion chamber to conform to the shape of the flame. Then the air that is going in with the oil can't slip away from the flame and not mix with the oil. In the gun type burner, the air will pass by the flame between the brick side walls and the visible flame without doing any work to assist the proper combustion of the oil.

"In building a fire box, we try to get .7 sq. ft. of deck space per gallon of oil per hour, and we try to get at least eighteen inches depth on a small job, because that keeps your air and oil in contact longer than if you have a shallow fire box. The shallow fire box is not so good because the air and oil get separated. Also, you don't get the effect of the radiant heat from the hot side walls.

"In designing a fire box, we have adopted what we call the principle of "stream lining" it—that is, we conform to the shape of the flame, keeping the box just a little bit smaller, and, by shaping the fire box to the shape of the flame, we keep turning it back on itself. This makes for complete combustion, helps keep your nozzle cool, and gives a more uniform fire. In some installations you will see one point of the brickwork that is red, and the rest of it fades away to a gray. In one of our "stream line" boxes, the brick all around is the same color—the same rosy, evenly heated surface extends all around. The point about keeping the nozzle cool is important, of course, because if it heats up you are apt to crack oil in the nozzle and clog it with the resulting products.

"What you want for complete combustion is great turbulence, and time for the oil and air to mix thoroughly. Do not put secondary air at the sides of the fire chamber. Take it from directly under the nozzle so the air will mix with the oil, and will not escape in dead areas at the sides."

Phone: Village 6787

KEWANEE ENGINEERING CORPORATION
OIL BURNING EQUIPMENT
Forsyth Building, 135 Forest Avenue
Oak Park, Illinois

DEAR SIR:

We offer you intelligent service for your oil burning equipment at reasonable prices. Our men are experienced and capable.

If you wish to take advantage of this service we will be pleased to have you mail the return card attached, checking the plan you desire. No stamp will be necessary. A prompt return of this card will be appreciated.

It is a good plan to clean the boiler as soon as the heating season ends.

Very truly yours,
JOHN S. PEOPLES, Pres.

At left — One side of the double postal card. This offers oil burner service for the season

OIL BURNER SERVICE APPLICATION

KEWANEE ENGINEERING CORPORATION
135 Forest Ave., Oak Park, Ill. Phone: Village 6787

Dear Sirs:

Kindly service my oil burner for the following year in accordance with the plan sketched below:

PLAN No. 1: Clean boiler, check and adjust burner, supply 3 service calls for $15.00 ☐

PLAN No. 2: Clean boiler, check and adjust burner for $7.50 ☐

PLAN No. 3: Service my.....oil burner for the next heating season at $2.50 per call ($3.00 night calls) payable C.O.D. or within 10 days of date of call ☐

NAME.....

ADDRESS.....

MODEL OF BURNER.....

At right — The card the customer returns, indicating the type of service he desires of the three offered

AUTOMATIC HEAT SECTION

. . . Here's the BOILER you need to SELL today's market!

Side cross section view 7 Series Water Boiler

Note that the gases are directed *backward* and *forward five times* to prevent heat waste. As these gases move back and forth, *they also move upward*—the *natural* way for heat to travel—because each flue is on a higher level than the preceding one. The result of this feature of design is SMOOTH FLOW fire travel. Friction is reduced to a minimum—making extra long fire travel possible.

New Weil-McLain Oil Burning Boiler meets today's most vital needs in domestic oil heating . . .

The new Weil-McLain Oil Burning Boiler is the boiler you can sell successfully in *today's* market—because it meets *today's* demand with features that *save fuel* and *cut costly waste. This* boiler provides *extra combustion* space *without* sacrifice of *long fire travel,* and it preserves long fire travel *without* sacrifice of *combustion space.* It achieves *scientific balance* between *all* boiler portions.

In many domestic size oil boilers, fire chambers vary from approximately square to extreme oblong in shape. In such cases, when fire chamber proportions are correct, length of fire travel is not. And, vice versa, when length of fire travel is correct, fire chamber proportions are not. In other words—improvements in one are obtained at the expense of the other!

But *not so* in the *new Weil-McLain Oil Burning Boiler!* In this boiler, the *diametric width* of the *round* firepot is increased to provide an *extended hearth* and the *extra combustion space* vitally essential to combustion efficiency when burning oil. Width and length of firebox are always the same. Long fire travel is provided without robbing the combustion chamber of its efficient proportions. *Not in any size* will you find a narrow fire chamber into which the oil burner must often be crowded and cramped.

In addition to this and other outstanding new features of design, these oil boilers retain those *tried* and *proved fuel-saving* and *heat-utilizing* features for which *all* Weil-McLain Boilers have long been famous:

CORRUGATIONS LIKE THIS ∿∿ in all vital heating surfaces add *30% more heat-absorbing surface* and increase the heat-absorbing *ability* of these boilers.

WIDE WATER CHANNELS, particularly in the combustion section, bring more water into this area of *greatest heat concentration* and assure *quick response*—more heat quickly when more heat is wanted.

EXTRA LONG "SMOOTH FLOW FIRE TRAVEL" assures more of the heat produced by the oil burner being *utilized.* There are no short cuts to the chimney.

Detailed information about this new, improved oil burning boiler is essential to keeping abreast with the most important developments in oil heating. Sent upon request, without cost or obligation. Write today.

W E I L - M c L A I N C O M P A N Y

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Weil-McLain

SCIENTIFIC COMBUSTION

BOILERS

FIGHT FUEL WASTE AND DELIVER MORE HEAT

AUTOMATIC HEAT SECTION

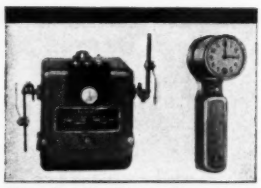
fact or fancy

MORE than 80% of American homes operate coal fired heating plants. Less than 10% of these homes are equipped with controls.

These are facts, not fancy. If you believe your customers are not interested in providing automatic controls for their coal fired heating plants, you are overlooking a vast market for damper regulators—a market that remains virtually untouched.

Minneapolis-Honeywell meets today's conditions with damper regulators for every purse and every requirement. Since 1885 Minneapolis-Honeywell has constantly kept pace with developments in the field of engineered automatic heat control. Face the facts. Go after that damper regulator business and pick up the profits you may be overlooking and make your customers conscious of automatic heat. Minneapolis-Honeywell Regulator Company. Executive Offices, 2801 Fourth Avenue South, Minneapolis, Minnesota. Factories: Minneapolis and Elkhart and Wabash, Indiana.

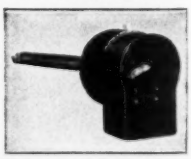
The Electric Janitor (above) for the low priced field. Entirely electric including motor. Sturdy, simple, dependable and exceptionally easy to install. For complete control and extra profits make a limit control part of every installation.



The Jewell Eight Day Clock Thermostat with Electric Motor.

The Jewell Jr. Clock Thermostat with Gravity Motor

Type 56 Aquastat for hot water systems.



Type 42 Vaporswitch and Type 33 Pressureswitch for steam or pressure systems.

Type 68 Furnaceswitch for warm air systems.

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MINNEAPOLIS-HONEYWELL
Control Systems

We show with this article two sketches which Mr. Peoples made during the interview. Each shows a type of brickwork for oil burner installations which, by constantly turning the flame back upon itself—the chambers being constructed to the shape of the flame—assures the turbulence and the length of time necessary for air and oil to mix thoroughly, thus assuring complete combustion. Note that there are no "dead" spaces in either fire box where the air can escape, doing nothing more than chill the flame and brickwork.

In a number of their installations, a water heating hook-up is used, the burner heating the water winter and summer. Mr. Peoples finds that more and more people are recognizing an economy in heating the summer water supply with oil.

SELLING BURNERS ON REPUTATION

The firm has somewhere in the neighborhood of thirteen hundred oil burner installations in the city of Chicago and its suburbs. It is only natural that, with the care and study given to properly installing the burners, these users form a constant source of leads for new sales. The builder of one of Chicago's finest hotels telephoned the firm to say that he had been given to understand that they knew how to put in oil buners—for which reason he wanted them to undertake a job in his residence. Obviously he had been talking with a satisfied user. The list of users is contacted several times a year. Any user furnishing a lead which is turned into a sale receives ten dollars.

Mr. Peoples handles much of the personal contact with prospects. When asked about his method of selling, he said: "It's up to the enthusiasm of the salesmen. People are now much more receptive to the idea of oil heating than before. The business has finally gotten itself arranged to give successful service; poor installations have been corrected and oil burner men are better educated now, he says.

They try, about once a month, to put some sort of mailing piece in the hands of prospective customers, using whenever possible letters of commendation from their satisfied users.

We show the double mailing card which the firm uses to secure service contracts. Mr. Peoples says that they had about sixty service contracts last winter; and that, altogether, they serviced something like four hundred burners regularly. The service department, he says, pays its own way. "The secret of a successful service department," said Mr. Peoples, "is to know what you are doing."

After he had sketched some of his ideas about proper installation to insure complete combustion, he was asked if he used the information in his selling. A great many men think that such engineering information has no place in the sales presentation. But Mr. Peoples is firm in his conviction that it is exactly the sort of thing the salesman should use. "We explain the importance of a good installation," he said, "and tell the prospect just what I have told you. That gives him some idea that we do know what we are doing, and it makes a good impression. In fact, we believe in stressing the engineering phases."

This is the type of home in which this firm has had great success with oil burner installations—and in securing leads for further sales

AUTOMATIC HEAT SECTION

1—How do back drafts affect the operation of gas equipment and what may be done to prevent them?

2—What is the formula for stack drafts and how is it derived?

3—How are stack drafts figured in practical work?

4—What different types of gas conversion burners are there on the market today?

5—How does an atmospheric burner differ from a refractory type?

6—What are the features of a blower type burner?

These questions have come to us from readers. Their answers are contained in the following article on

Practical and Theoretical Features of Gas Conversion Jobs

By R. H. RUWALDT

TODAY the heating engineer has quite a wide choice of gas conversion burners for use in coal burning equipment. And, perhaps a random choice of any one of these burners might give very satisfactory results, both as regards performance and efficiency. There are however some features about certain burners which make them more adaptable to the particular job at hand. In the following will be discussed some of the salient features of several of the various types of gas conversion burners with which we have had experience as well as their combustion characteristics.

ATMOSPHERIC GAS BURNERS

We have made numerous installations using the atmospheric type of gas burner. In all cases we have been able to make it operate efficiently. In this type burner primary and secondary air adjustments are very flexible. A cast disc threaded on the orifice fixture controls the primary air, while secondary air is controlled by a shutter moving down from the top of the burner housing, as the motor valve turns on the gas. In most cases the burner consists of a cast iron head with raised ports. Refractory baffles direct the heat against the side of the combustion chamber, where the heat transfer to the heating medium occurs. With this type of burner the only pressure produced in the combustion chamber is that due to the heat increase of the combustion gases. This force alone is available to overcome the static resistance of the chimney in setting up a draft.

REFRACTORY GAS BURNERS

In the past several years there has been developed another type of atmospheric burner along the general design of the above mentioned, but following more specifically the theory of radiant heat. In this burner the head is completely surrounded by refractory rings to a height of approximately 18 in., giving a kiln like appearance, and covered with a metal plate at the top. These refractory rings become incandescent hot and radiate quantities of heat which impinge upon the side of the combustion chamber and thus transfer heat to the heating medium. The high efficiency of refractory incandescence is based on the law of Stefan which states that the heat radiated is equal to the fourth power of the body radiating it viz: $Q_R = KT^4$, where Q_R is the quantity of heat radiated, K a constant depending on the body heated and T the absolute temperature of the body. In some installations where the heating load is small, there is a tendency to overshoot the desired room temperature. This is due to the residual heat stored in the refractory after the gas has been turned off. While our experience with this type has been limited, what we have had has been quite satisfactory. This burner also depends upon natural stack draft to carry off the products of combustion.

AUTOMATIC HEAT SECTION

"BARBER BURNERS *are low in operating cost" — that's the feature that meets today's buying demand!*

No. 300-B Barber Automatic Burner

BARBER JET GAS BURNERS with fourteen years' experience have been so improved and advanced in mechanical construction that today, *low operating cost* is the selling theme of all BARBER Dealers.

BARBER BURNERS are low in first cost, low in operating cost, and so developed mechanically that they have reached the highest point of safety and efficiency.

In addition the public is responding to the publicity given Automatic Heat and are now demanding this type of home comfort. BARBER JET GAS BURNERS will convert any hot water, steam or furnace system into clean, even, economical and completely automatic heat. Installation is simple and inexpensive, owing to the fact that nothing in the existing system must be replaced.

Illustrating No. 324-B Barber Automatic Burner installed in a round boiler. Note its simplicity of installation.

You simply send us the Name of the Manufacturer of Boiler or Furnace in the home of your customer, its Trade Name and Number. We forward a tailor-made BARBER BURNER that will give your customer a 100% job of low cost automatic heat.

TODAY is the time to cash in on Gas Conversion Jobs

Write us today for the advantages of BARBER JET GAS BURNERS in connection with Automatic Heat. Let us tell you how we assist the dealer with literature and dealer co-operation that will enable you to capitalize on the demand for Automatic Heat.

THE BARBER GAS BURNER COMPANY

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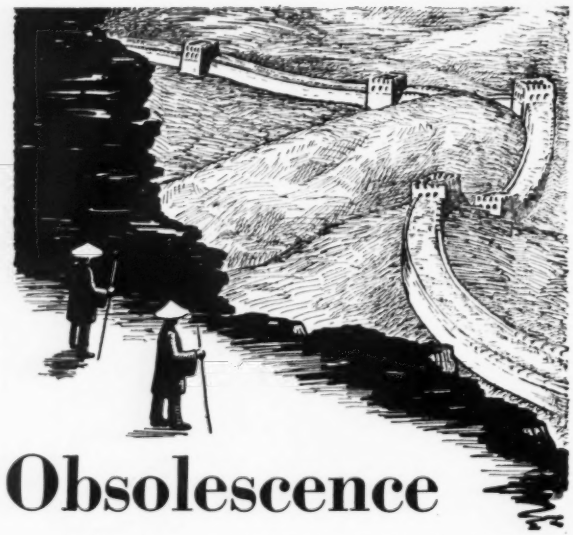


Obsolescence

Obsolescence parallels time in its flight and plays no favorites. The ancient walls of China are scarcely more antiquated than many a modern product that, only yesterday, we thought excellent.

Nowhere is the pace more swift than in the electrical industry. Developments come so fast that today's "best" is quickly superseded by tomorrow's "better."

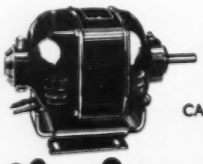
The successful motor design for automatic stoker, oil burner and refrigerator applications, to cite a case, must be—

of latest design
of unquestioned dependability
vibrationless and quiet running
a design that will not interfere with radio reception

The Leland cradle-mounted motor fulfills those requirements.

This motor is equipped with a short-circuiting device capable of a million stops and starts without showing wear—with a simple and positive brush-lifting mechanism — with a continuous, self-filtering lubricating system that effectively safeguards against bearing wear.

Builders of stokers, oil burners and refrigerators are urged to send for Bulletin No. 28 describing this motor in detail.



The LELAND ELECTRIC CO
DAYTON OHIO U·S·A
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Leland Motors

BLOWER TYPE BURNER

Several years ago designers of gas burners launched on the design of a burner embodying positive features of operation. These features were, (1) a definite premixture of air and gas at all times, and (2) a positive pressure inside the combustion chamber tending to produce a stable draft condition irrespective of atmospheric conditions or wind velocity. Several burners of this type were manufactured and in general gave very satisfactory results as regards performance and efficiency. The type burner which we installed consisted of a small blower direct connected to the armature shaft of the motor driving it. The air mixture is regulated by a disc on the side of the blower. The premixed gas and air is discharged through a circular ring burner approximately 6 in. in diameter, under a bed of refractory chips, approximately 18 in. in diameter. The refractory bed usually consists of carborundum which is an extremely hard substance, able to withstand temperatures up to 2220 degrees Centigrade. The heat transfer from this burner is almost entirely by radiation. In one particular installation in our experience this burner ran into very difficult operating conditions. The installation was made in the boiler room of a cement block factory. In this particular factory the air is literally saturated with cement dust.

Workmen entering the boiler room forget to close the door and as a result volumes of the dust would be pulled through the burner blower, and deposit in the flue passages of the boiler. Remedies suggested were a filter housing or outside air intake.

STACK DRAFTS

Combustion is maintained in a boiler by a continuous supply of air moving through the fuel bed. The pressure causing this air movement results from the difference in weight of the hot gases in the stack, and the outside air, and also upon the height of the chimney. The equation which expresses the intensity of this pressure or force is:

$$D = 0.192H\ (d_A - d_C) \qquad (1)$$

where D = maximum theoretical static draft, inches of water.
H = effective height of the chimney in feet.
d_A = density of the outside air, pounds per cubic foot.
d_C = density of the inside gas, pounds per cubic foot.
0.192 factor for converting pressure in pounds per square foot to inches of water.

The pressure D must be great enough to move sufficient air through the boiler and stack against the fuel bed resistance, flue resistance in the boiler, damper and breeching resistance, and the resistance of the stack itself.

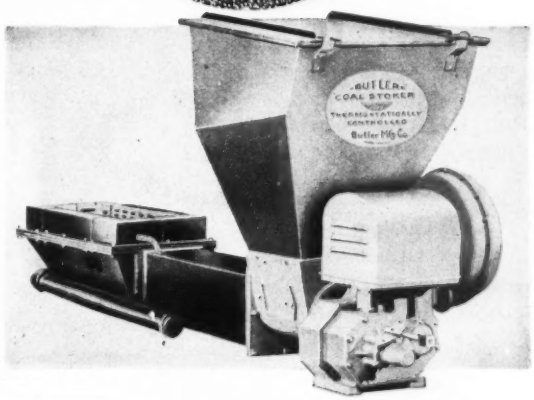
Ordinarily every coal burning boiler converted to gas has a gain in static draft. This results because of the decrease or elimination of the fuel bed resistance when gas is substituted. This gain in static draft may account for the better performance of some boilers using gas as a fuel, as compared to a poor draft condition

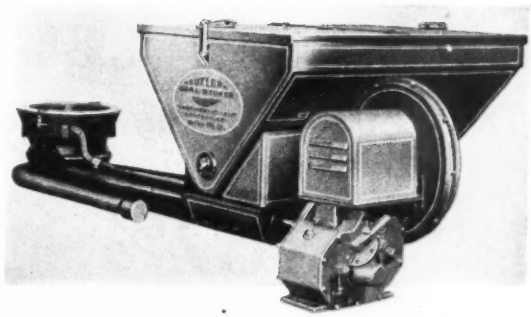
ECONOMICAL AUTOMATIC HEAT

Is In Demand . . . Has Already Opened a Flourishing New Field of Business . . .

GET INTO IT WITH THE BUTLER COAL STOKER

11 Sizes Adaptable to All Residential and Commercial Heating Purposes—Priced to Sell from $275.00* and Up





THE nation is sold on Automatic Heat. A million homes and places of business have been paying extra for special fuels in order to enjoy it. The demand is greater than ever before **But It Is NOW A Demand For Economical Automatic Heat.**

Coal, always the most economical fuel, now is made even more economical and **The Most Efficient Automatic Fuel.**

Dealers on the alert for real opportunity are getting into this fast moving, flourishing field with the outstanding bituminous coal stoker—The Butler—unrivaled in efficiency, unmatched in simplicity of design and in operation.

It is not too late (unless your territory is already assigned). From now on is stoker selling season—The Butler Coal Stoker is **Salable The Year Around** to apartments, hotels, hospitals, schools, stores, office buildings, greenhouses, laundries and other commercial and semi-industrial enterprises which are adopting every economy measure possible to cut down operating expense.

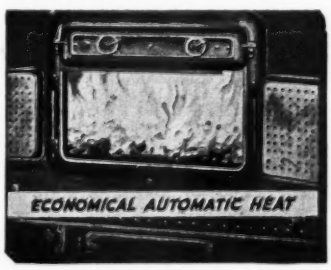
With the Butler Coal Stoker you can show them savings of from 15 to 50% on fuel bills, a return of as much as 40% the first year on their investment, fully automatic heating and elimination of smoke, soot and loose ashes.

Get the full history of the Butler Coal Stoker, details of its advanced design, patented system of air distribution, adjustable regulation of air flow, unique, silent, selective transmission which changes fuel feeding speed without shifting a single gear, back smoke eliminator and dual automatic control system—write for the new book pictured below and you will readily recognize that a genuine opportunity to found the leading automatic heating business of your community is being presented. When we send the book we will tell you of our nationwide merchandising program which makes the Butler Coal Stoker dealer franchise extraordinarily valuable.

*Freight and Installation Extra

START THE LEADING AUTOMATIC HEATING BUSINESS IN YOUR TERRITORY

SEND FOR THIS BOOK TODAY



BUTLER COAL STOKER

BUTLER MANUFACTURING COMPANY,
1263 Eastern Ave., Kansas City, Mo. 963 6th Ave., S.E., Minneapolis, Minn.

- ☐ Send copy of Butler Stoker Book "Economical Automatic Heating".
- ☐ Advise if ..... territory is open.
- ☐ Send district representative when conveniently near.
- ☐ Have him call as soon as possible.

Firm Name .....

By .....

Address .....

City ..... State .....

AUTOMATIC HEAT SECTION

while using a solid fuel. In a specific installation all factors governing static draft are fixed, excepting the variables d_A and d_C. The variable d_A is a function of atmospheric conditions viz.: temperature, and pressure. These are related according to Boyle's law,

$$\frac{V_1}{V_2} = \frac{P_2}{P_1} \qquad (2)$$

in which the volume of the gas varies inversely as the pressure, and according to the law of Charles, viz.:

$$\frac{V_1}{V_2} = \frac{T_1}{T_2} \qquad (3)$$

in which the volume varies directly as the temperature. Combining equation (2) and (3) we have,

$$V_2 = V_1 \times \frac{T_2}{T_1} \times \frac{P_1}{P_2} \qquad (4)$$

From a table of volume and densities of air we find that at 32 degrees Fahrenheit, one cubic foot of air weighs 0.0807 pounds. Substituting this value in equation (4) we have,

$$d_A = .0807 \times \frac{T_2}{T_1} \times \frac{P_1}{P_2} \qquad (5)$$

in which,

P_1 = observed atmospheric pressure, pounds per sq. in.

P_2 = standard atmospheric pressure, pounds per sq. in.

T_2 = absolute temperature at freezing, degrees Fahr.

T_1 = absolute temperature of the outside air, degrees Fahr.

The same equation may be written for d_C, viz.:

$$d_C = .085 \times \frac{T_2}{T_C} \times \frac{P_C}{P_2} \qquad (6)$$

where T_C = absolute temperature of the chimney gas degrees Fahrenheit and P_C = mean pressure of the chimney gas. Substituting these values of d and d in equation (1), and assuming $P_C = P_1$.

$$D = 0.192\ H \frac{P_1}{P_2} \left(\frac{.0807\ T_2}{T_1} - \frac{.085\ T_2}{T_C} \right) \qquad (7)$$

The above equation may be simplified by assuming, $P_1 = P_2 = 14.7$ and the same density for the chimney gas and outside air, in which case,

$$D = 0.52\ P_C \left(\frac{1}{T_1} - \frac{1}{T_C} \right) H \qquad (8)$$

in which case D is the maximum theoretical static draft.

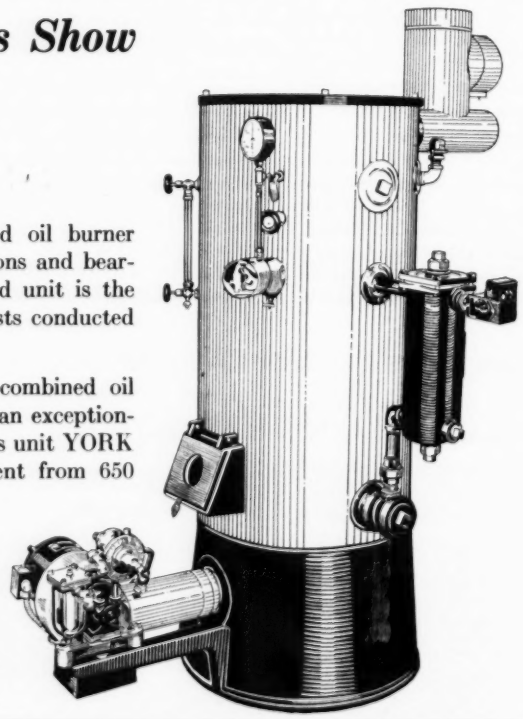
A PRACTICAL EXAMPLE IS WORKED OUT

As an example let us assume a case where the outdoor temperature is 0 deg. Fahr., flue gas temperature 300 deg. Fahr., and chimney height 40 ft. Substituting in equation (8) we have,

YORK BOILER-BURNER UNIT

Tests Conducted by Dealers Show An Efficiency of

87%



Here is a really remarkable oil burning boiler and oil burner combined. Built according to A. S. M. E. specifications and bearing the Hartford Stamp of Approval. This combined unit is the result of thousands of oil burner installations and tests conducted over a period of thirteen years.

For the first time in the history of the industry a combined oil burner and boiler unit is offered at a price that affords an exceptionally strong appeal to the consumer. In addition to this unit YORK manufactures a complete line of oil burning equipment from 650 feet of radiation to any size industrial equipment.

Here is your opportunity to sell an efficient burner-boiler unit and make two profits instead of one. Write now for prices and descriptive matter!

YORK OIL BURNER CO., Inc.
YORK PA.

$$D = 0.52 \times 14.7 \left(\frac{1}{460} - \frac{1}{760}\right) 40$$

$= .276$ inches of water.

Let us take this same condition with the outdoor temperature at 50 deg. Fahr.

$$D = .52 \times 14.7 \left(\frac{1}{510} - \frac{1}{760}\right) 40$$

$= .184$ inches of water.

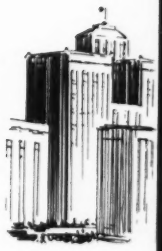
The above calculations indicate clearly why many solid fuel heating plants operate more satisfactorily in cold weather than at temperatures well above zero. They also supply us with important information to be utilized in the installation of gas conversion burners, viz.: the most desirable time to make the proper flue gas analysis.

ANALYZING THE FLUE GASES

Perhaps the most important item in the successful installation of gas conversion burners is the analysis of the flue gases, and the time such an analysis is made. As we have noted above, on zero days the static draft through the chimney is considerably greater than at temperatures around 50 deg. Fahr. This means that if the flue gas analysis is made during zero weather more baffling in the boiler may be necessary to secure proper combustion of the gas, without an excess of free air. Primary and secondary air adjustments of the burner may also be set where they will prove critical with a rise in outdoor temperature. To overcome these conditions, it is desirable to make the analysis as nearly as possible at a time when the seasonal mean temperature prevails. For the Chicago area this may be taken as 35 deg. Fahr. In making tests with an Orsat we do not attempt to secure perfect combustion. Using coke oven gas as a fuel of 570 Btu. per cubic foot, the ultimate CO_2 is approximately 11 per cent. In the burner setting using the above gas, we consider the installation efficient when we get 9 per cent CO_2. While it is possible to do better, it is usually at the expense of extinguished pilots, and an unsatisfactory heating service from a customer view point. The above setting of 9 per cent CO_2 permits of a variation in atmospheric conditions without materially affecting combustion in the boiler. In following the above procedure an installation should result which is both efficient and continuous in its performance. Another problem we are sometimes called upon to solve is back-draft.

BACK DRAFT

Back drafts are caused by the proximity of buildings which rise beyond the chimney top. High winds striking such a building swirl downward and back, and when tops of chimneys are in the path of such wind movements, static drafts are counteracted, and the flue products do not pass into the atmosphere. When of sufficient severity flue gases are blown back down the chimney and smother combustion. In nearly all gas heating installations, draft diverters are used. These are installed just above the flue outlet of the boiler and in a vertical position. They serve a two-fold purpose, (1) they



The Duo-stat guarantees YOUR job!

AUTOMATIC HEAT SECTION

REMODELING of a heating system isn't done for the mere sake of remodeling. There must be some sound reason for it—something that will *justify* the expense involved—something that will assure *results*.

The Duo-Stat is that something.

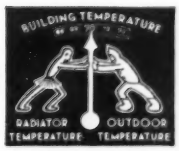
Having put the heating system in good shape, the Duo-Stat brings out its full possibilities. Its performance is a known quantity, proved out in hundreds of installations. The mere remodeling of a system does not assure definite economies. But a remodeled system *plus* the Duo-Stat *does*.

The Duo-Stat is an entire departure from all former controls. It is the first system that balances radiator temperature against outside temperature. That is why every remodeling job can be centered around the Duo-Stat.

The Duo-Stat can be made the way *in* to profitable jobs—and the *out* to economies that make and multiply customers.

Duo-Stat weather is almost here. So write for engineering data *now*.

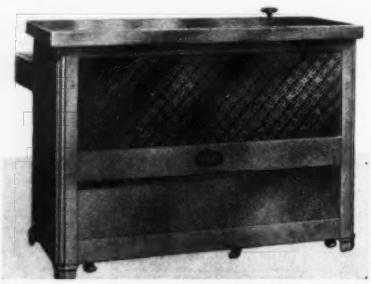
F. I. RAYMOND CO.
627 W. Washington Blvd.
CHICAGO, ILL.

RAYMOND 

DUO-STAT

AUTOMATIC HEAT SECTION

Easy Sales
and
IMMEDIATE PROFITS
with the



THERMOIL *OIL-FIRED* RADIATOR

Generous heat circulated to the far corners at rate of 325 lineal feet per minute. Continuous hot water when desired. Completely self contained. Full automatic operation through high-low thermostat control.

No gas or electricity necessary. No water piping where hot water is not required. Low fuel cost. Burns No. 2 furnace oil. Handsome cabinet—an ornament to any surroundings. Priced to meet today's demand.

Tremendous sales possibilities—small homes; hard to heat rooms in large houses; farm homes; stores and offices; oil stations; restaurants; garages and summer homes.

The Thermoil Radiator Franchise quickly builds substantial profits through easy and frequent sales. Write for full information on Thermoil Franchise while your territory is still available.

THERMOIL HEATERS, INC.
620 Main Street Benton Harbor, Mich.

"LYNN" RANGE OIL BURNER PATENTS HELD VALID

In a decision recently handed down by the United States Court, District of Massachusetts, the "Lynn" patent in that suit was declared valid. The defendants were held liable for costs and damages, thus the patented advantages exclusive with Lynn Range Oil Burners are clearly demonstrated.

●

LYNN PRODUCTS COMPANY
LYNN - - MASSACHUSETTS

divert back-drafts from passing into the boiler flues, (2) they reduce the draft through the fuel bed. In gas conversion installations this latter is a very desirable requirement, as it eliminates considerable baffling in the boiler flues to secure proper combustion. In some cases dampers are used in the breeching, but many gas companies do not permit this practice, because of combustion hazards due to dampers being accidentally closed. In some installations, draft diverters can not be used. This usually occurs where boiler flues are tapered to restrict the draft through them, or where the static draft of the chimney is inadequate. Draft diverters do not always solve a back-draft problem. Where the back-draft is too severe, due to high adjacent buildings, it can only be solved by extending the chimney, or employing a blower to develop the required pressure to overcome the down draft.

Petroleum Heat & Power Co. Increases Working Force Ten Per Cent

The Petroleum Heat & Power Company of Stamford, Conn., manufacturers of industrial and domestic oil burners, has increased its working force about 10 per cent. Sales of the company for the first six months of 1932 were in excess of the corresponding period of 1931, according to Morgan J. Hammers, vice-president and general manager of the company. July developed the largest sales total of any July in the history of the company.

Good Prospects Secured by Displays in Bank Lobbies and Other Semi-Public Places

J. L. O'Brien, general manager of the Toridheet division of the Cleveland Steel Products Corp. in Cleveland, Ohio, is co-operating with oil burner dealers in arranging special demonstrations in bank lobbies and other available space in downtown districts.

"Banks are usually agreeable these days to placing displays that are educational along economic lines," states Mr. O'Brien. "One large maker of heating equipment recently obtained thirty live prospects and two immediate sales by a display of this nature in one prominent Cleveland bank."

Increase License Tax in Halifax

The laws and privileges committee of the city council of Halifax, N. S., has decided that, in future, the cost of a license for a master plumber in Halifax will be $100, and that the renewal of this license each year following will be $10. This legislation was strongly urged by the Master Plumbers' Association of Halifax, of which W. Walker is president. The old rate was $10, with a one dollar charge for the annual renewal.

Will Manufacture Oil Burning Equipment

J. H. Rothenberger and R. W. DeLaney have organized the "RA" Oil Burner Co. for the manufacture of oil burning, domestic heating equipment at La Crosse, Wis. The new company has leased manufacturing space in the former plant of the La Crosse Tractor Co.

Silent Glow International Convention and Exhibition in Montreal

The Silent Glow Oil Burner Corporation of Hartford, Conn., and the Silent Glow Oil Burner Corporation, Ltd., of Montreal, Quebec, held their second international convention and exhibition in the Mount Royal Hotel in Montreal during the first week of August. The entire ninth floor of the hotel was elaborately decorated for the occasion.

Among the speakers at the convention were R. M. Sherman, president of the American and the Canadian corporations; Harold G. Elrod, vice president of the Candian corporation; R. A. Kuhn of the A. McKim, Ltd., Advertising Agency; C. B. Cook, vice president of the Silent Glow Oil Burner Corporation; W. A. Kemp, manager of the corporation's power burner division; Paul D. deLahunta, sales promotion manager of the factory, and Arthur Clark, secretary of the American Oil Burner Association.

Both the convention and the exhibition were well attended, including more than seven hundred dealers and more than two thousand prospects. The exhibition included demonstrations of actual installations of oil burners in boilers, furnaces, kitchen stoves and other forms of heating appliances.

Sound Selling Plan Brings Increased Sales of Oil Burners

"Selling oil burners—selling automatic heat—is like any other selling in that the basis of success is a sound and intelligent plan which is persistently pursued," according to J. L. O'Brien, general manager of the oil burner division of the Cleveland Steel Products Corp., Cleveland, Ohio, upon returning from a recent trip in which he contacted many oil burner dealers in the eastern section of the country.

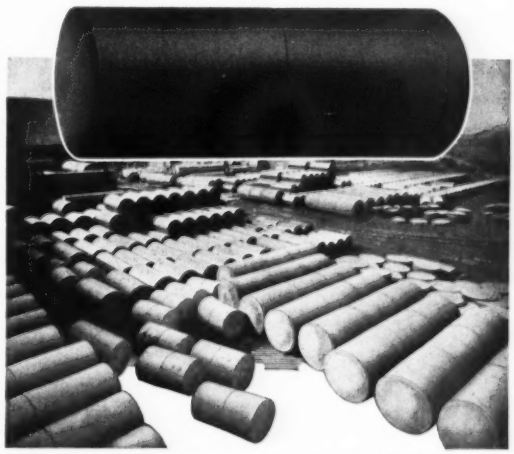
In many instances he found dealers whose sales are running well ahead of last year. And in almost every case, Mr. O'Brien found that the oil burner dealer who is using a definite plan, geared to 1932 conditions, is making definite progress and proving that this is really a good year for the oil burner business.

The essential of oil burner success these days, Mr. O'Brien finds, is first of all a hard-hitting sales plan. At least 20 per cent of all well planned personal calls develop into actual prospects. Closing such prospects is a matter of demonstration in which the dealer himself can be of valuable assistance by pointing out the economic value of automatic oil heating.

New Dealers Appointed in Foreign Countries

The Petroleum Heat & Power Co. of Stamford, Conn., has recently appointed the following dealers in foreign countries: John Dowling & Sons, Ltd., 5 Upper Queen Street, Belfast, Ireland; E. Nassau, P. O. B. 147, Athens, Greece; Ing. Aldo Gini, Via Corragio 18, Milan, Italy; Frederico Ruiz y Hijos, 2a del General Ragules, 49, Mexico, D. F.; Edward King A. G., Zurcherstrasse 552, Seebach, Zurich, Switzerland; and Ing. Nicolai Miller, Strada Apolodor 3, Bucharest (1), Roumania.

Fuel PDM TANKS Oil
TANKS



Quality oil burner tanks for all types of installations—domestic, factory or bulk storage. Hydro-pneumatic tanks can be furnished in any size to your specifications.

Write today for our New Closed Tank Bulletin.

PITTSBURGH-DES MOINES STEEL COMPANY
3478 Neville Island, Pittsburgh, Pa.—Room 961, 270 Broadway, New York City

AUTOMATIC HEAT

Every Home that does not have Modern, Low-cost Automatic Heat is a Spencer prospect

Get your share of this big replacement business that is waiting for heating contractors who go after it. Write for the Spencer Sales Starter Plan.

SPENCER HEATER COMPANY
Division of Cord Corporation
Williamsport, Pennsylvania
The Spencer Foundry Co., Ltd., Toronto, Ont., Can.

SPENCER
Magazine Feed
BOILERS
for steam, vapor or hot water

AUTOMATIC HEAT

CONVERSION BURNERS

do their work better with

TEEPLE SPECIALIZED GAS CONTROLS

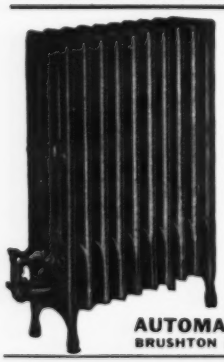
WRITE FOR LITERATURE AND PRICES

L. R. TEEPLE CO.
PORTLAND, OREGON

TEEPLE SPECIALIZED GAS CONTROLS

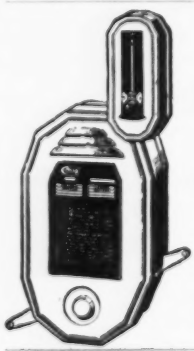
THROUGHOUT THE WORLD TEEPLE SPECIALIZED STOKER CONTROLS OPERATE THE FAMOUS IRON FIREMAN . . . THE MACHINE THAT MADE COAL AN AUTOMATIC FUEL

AUTOMATIC GAS-STEAM RADIATORS



Modern heating equipment, meeting present day demands, approved by the American Gas Association Testing Laboratories. Can be used as part of the regular plant in heating season, or as a separate heating unit in unseasonal weather. Its biggest selling features are economy of operation and ease of installation. Write for information.

AUTOMATIC GAS-STEAM RADIATOR CO.
BRUSHTON AND THOMAS STS. PITTSBURGH



COOK HEAT CONTROL

Automatically opens and closes the draft and check doors of hard fuel heating plants at the demands of a thermostat

QUICK TURNOVER
BIG PROFITS
DEPENDABLE PRODUCT

Write today for complete merchandising plan and prices

COOK ELECTRIC CO.
2700 Southport Ave. Chicago, Ill.
Controls for Heating—Ventilating—Air Conditioning

Opens Export Office and Appoints Two New Distributors

The Automatic Products Company of Milwaukee, Wis., manufacturer of automatic controls for heating equipment, has opened an export office at 15 Laight street, New York City. The company has also appointed two new distributors: Fee & Stemwedel, Inc., 221 West Chicago avenue, Chicago, Ill., to cover northern Illinois and northern Indiana; and Fagan & Andrews, 181 West Michigan street, Milwaukee, Wis., to cover Wisconsin, northern Michigan, Minnesota, Iowa, North Dakota and South Dakota. The company is planning to add a line of automatic controls for air conditioning equipment, and it is enlarging its plant to handle its increased production schedule.

Graded Oil Burner Markets

The American Oil Burner Association, Inc., of New York City, has just completed, for its membership, an exhaustive analysis showing the potential markets for domestic oil burners by counties, states and groups of states, thus placing a graded market value on every single county in the United States.

This survey, which is entitled "Graded Oil Burner Markets," has been prepared for executives charged with the responsibility of sales, advertising or market expansion, and it provides state and county index bases on which localized market maps may be prepared with a high degree of accuracy.

The base index, founded on concentration of market, standard of living and possession of wealth, takes into consideration the following elements: Number of dwellings, number of native white families, number of telephone families, number of residential, urban and rural electric service users, number of income tax returns filed and spendable money index.

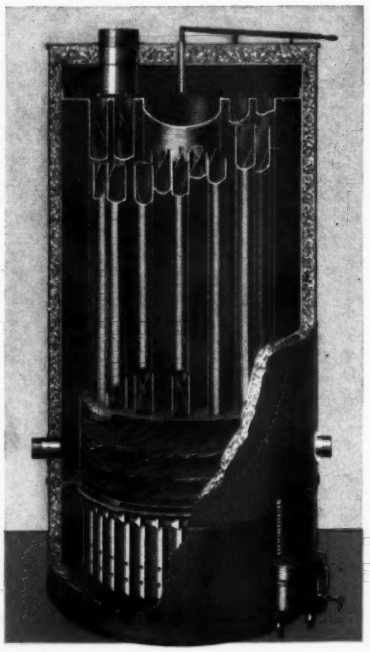
Columbus Stoker, Inc., Holds Sales School

The Columbus Stoker, Inc., recently organized and established at 232½ North High street, Columbus, Ohio, held a one-day sales school in August at its general offices, attended by more than forty salesmen. The principal speakers were Charles Hoffman, president, and Paul W. Dillingham, vice president of the new concern, which is distributing stokers, water softeners and air conditioning units. The officers of the company are Charles Hoffman, president; Paul W. Dillingham, vice president and general manager; Harry Browning, secretary; P. H. Schultz, treasurer. The directors are: Charles Hoffman, Harry Browning, P. H. Schultz, J. G. Groscost, James Hoffman and P. W. Dillingham.

Oil Heating Association Formed in Syracuse

Oil burner dealers and representatives of distributing oil companies in Syracuse, N. Y., have recently formed an organization under the name of the Syracuse Oil Heating Association, with Harold L. Schultz as president, and Charles B. Cooper as secretary. Other officers will be elected as soon as the by-laws and the constitution have been drafted.

THERE'S POSITIVELY NOTHING LIKE IT!



Heat generated by the furiously gyrating flame of the new MW Gyro-Flame Burner is kept in rotary upward motion by spiral baffles extending the full length of the vertical tubes. Having reached the top the heat is drawn downward again through a large center tube. Complete heat utilization is assured in this manner.—Listed as Standard by Underwriters' Laboratories.

* * *

The gyrating motion of the flame is fully under way when the air stream enters the combustion chamber through holes set at a tangent. This motion is greatly intensified and "stabilized" when the rotating air streams strike the ingeniously contrived circular baffle.

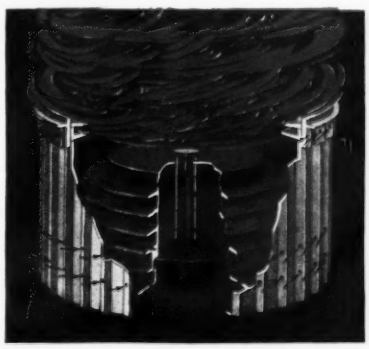
New MW Boiler Units, with sensational Gyro-Flame Burner, Make More Oil-Heat Prospects Than Anything in Dealer's Experience . . .

All over the country dealers are now demonstrating the sensational MW Automatic Boiler Units, and booking new-installation and replacement orders.

The unique action of the revolutionary Gyro-Flame burner, in which a furiously rotating flame is generated without the use of a single moving part—the new efficiency of a radically improved boiler specifically designed for that burner, together with many other new features—make these new Boiler Units this year's outstanding opportunity for dealers.

MW dealers also enjoy the profit advantages of a versatile MW line of oil-burning utilities adapted to all-season selling—the famous MW "Automatic Weather Control Units", Automatic Boiler Units for Steam and Hot-Water Heating, Automatic Water Heaters, Oil-Burning Ranges—all items offering exceptional sales, installation and servicing profits.

The MW dealer franchise is a business-stimulating proposition, gauged to present economic conditions. Write for details today, using the coupon.



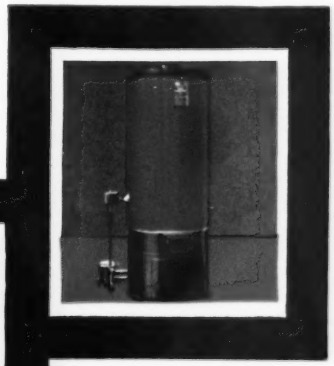
MW

AUTOMATIC • OIL-BURNING

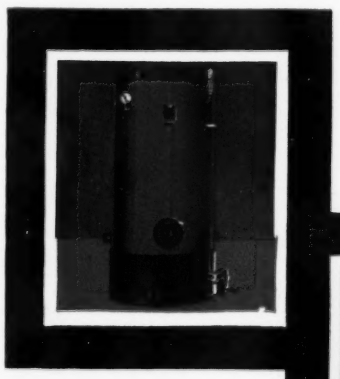
BOILER UNITS

MW AUTOMATIC WATER HEATERS

Domestic and commercial sizes. For homes, apartments, office buildings, schools, shops, laundries, factories. Single and battery installations. Hot water at lowest cost. Listed as Standard by Underwriters' Laboratories.



PRODUCTS THAT SELL SPRING, SUMMER, FALL AND WINTER

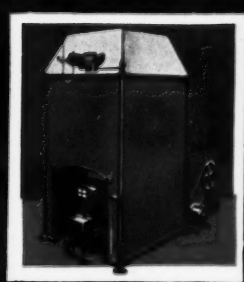


MW AUTOMATIC BOILER UNITS

For steam or hot water heating. Incorporate the amazing oil-burner development—the new, super-efficient MW Gyro-Flame Burner. Large and small capacities.—Listed as Standard by Underwriters' Laboratories.

MW OIL-BURNING COOKING RANGES

Two types—for homes, restaurants, lunch rooms, roadside stands, hotels, clubs, etc. Quick, clean, uniform, controlled heat—the better, more economical way of cooking, frying, roasting, baking.



MW "AUTOMATIC WEATHER CONTROL UNITS"

Round and square types. Warm air in Winter, cool air in Summer. Low cost and economical upkeep. Most popular air-conditioning unit on the market.—Listed as Standard by Underwriters' Laboratories.

MOTOR WHEEL CORPORATION, DEPT. B-9
HEATER DIVISION, LANSING, MICH.

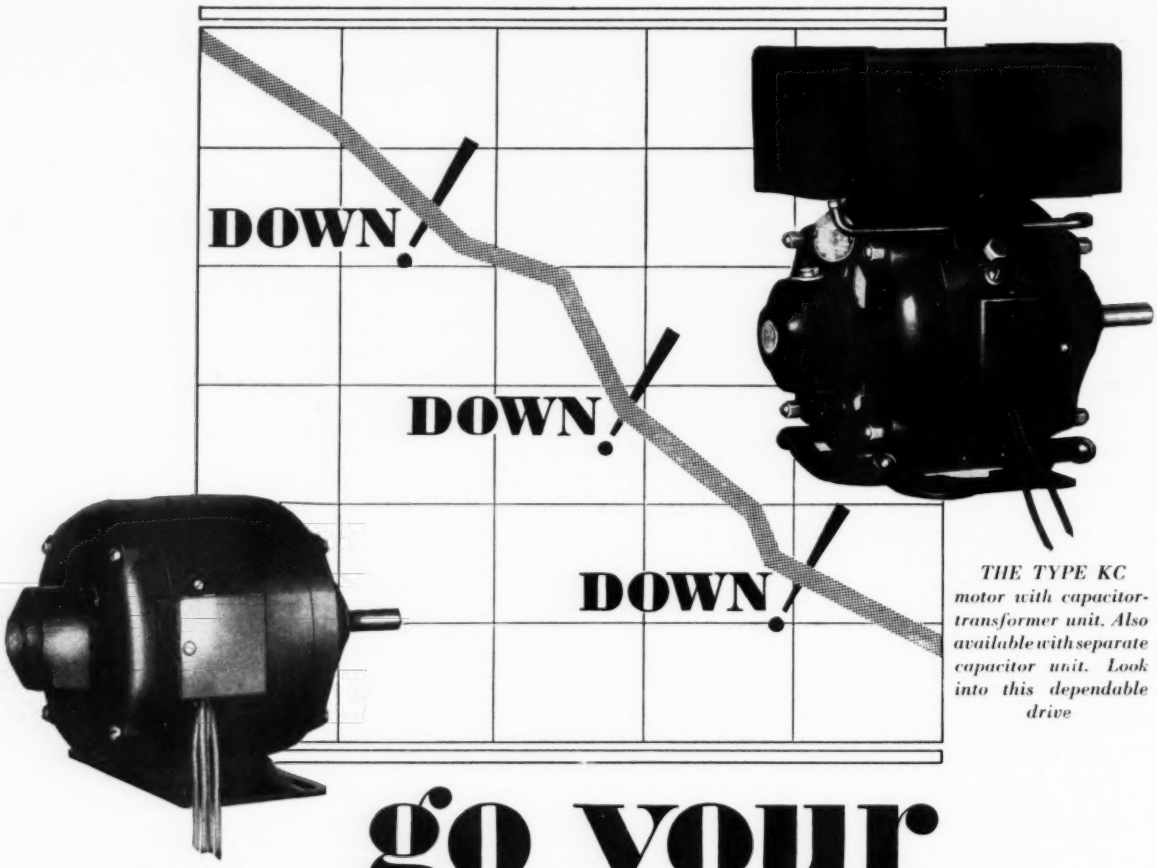
Please send me full information describing the MW line of oil-burning utilities, and explaining its sales and profit opportunities.

Name.....

Address.....

City.....*State*.....

AUTOMATIC HEAT SECTION



THE TYPE KC motor with capacitor-transformer unit. Also available with separate capacitor unit. Look into this dependable drive

THE TYPE KH resistance split-phase motor equally dependable and efficient. Ask about it

go your service problems when you specify G-E motors

WITH a General Electric motor—available in a wide variety of types and ratings—on your oil burner, the graph of your service complaints approaches zero.

Specify G-E motors. You will find that they meet the torque requirements of your product. You will find them "cost-low" in maintenance, long-lived, and dependable. Backed by years of experience—endowed with the unparalleled acceptance everywhere accorded G-E products—they represent one of the soundest equipment values on to-day's market. Investigate also General Electric transformers, cable, etc. for the modern oil burner.

Call in a G-E motor specialist; he will be glad to coöperate with you in the solution of your drive problems. General Electric Company, Schenectady, N. Y. Sales and engineering service in principal cities.

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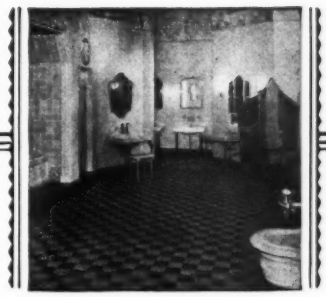
GENERAL ELECTRIC

SUPPLY NEWS

FOR MANUFACTURERS, WHOLESALERS, SALESMEN



General Electric Appoints Dealers to Sell Air Conditioning Units

The General Electric Co., Schenectady, N. Y., has entered the Philadelphia, Pa., market with its air conditioning equipment and has selected S. S. Fretz Jr., Inc., as the representative in that territory. Showrooms in charge of George Myrick Jr., were opened on Aug. 26 at 2514 North Broad street, Philadelphia.

Other dealers appointed by General Electric Co. up to Sept. 1 follow:

Automatic Appliance Corp., Stamford, Conn.; M. J. Daly & Sons, Inc., Waterbury, Conn.; L. C. Kelley Sales Co., Bridgeport, Conn.; Sumner L. Willson, Hartford, Conn.; General Engineering Corp., Washington: Air Conditioning Corp., Newark, N. J.; General Air Conditioning Corp., Baltimore, Md.; Good Housekeeping Shop, Providence, R. I.; Gene Meenan, Brooklyn, N. Y.; Amos D. Gridge's Sons, Inc., Springfield, Mass.; Brosnan Heating Co., Worcester, Mass.; Lawton Engineering Corp., Boston; W. J. Shaw, Pittsfield, Mass.; A. L. Hart, Patchogue, N. Y.; Kalteux Bros. Co., Schenectady, N. Y.; Keating Air Conditioning Corp., New York City; Strain & Sutton, Poughkeepsie, N. Y.; Westover Wolfe, Inc., Albany, N. Y.; Smith-Cunningham Co., New Haven, Conn.; Hawes Electric Co., New Bedford, Mass.; N. K. Ovalle, Inc., Harrisburg, Pa.; W. R. Thropp & Sons, Trenton, N. J.; Harder's, Kingston, N. Y.

The new units represent the entry of the General Electric Co. into the air conditioning and home heating field after five years of research and experimental work. The first piece of equipment to be marketed will be an oil-burning home heating boiler, with oil burner, electric controls, hot water heater and boiler designed and built as a unit.

Immediately following the introduction of the oil furnace, two types of winter air conditioning equipment for home use will be placed on the market, as well as the line of General Electric heat controls for existing heating systems.

Air-conditioning, by means of which the air inside a building is purified and circulated, and the temperature and humidity kept under automatic control, is a comparatively new development which has been adopted widely in recent years for theaters and public buildings and, more recently, for crack railroad trains. Five years ago the General Electric Co. undertook an extensive program of experimental work with a view to extending air conditioning and automatic heating to the home. This work has now reached a stage where the first units are ready and a sales and service organization is being built to handle them.

C. F. Church Mfg. Co's. Two-Weeks Sales Exceed Previous Five Months

C. F. Church Mfg. Co., a subsidiary of American Radiator and Standard Sanitary Corporation, reports that sales for the first two weeks in August exceeded the total sales for the previous five months. Both factories of the Church company, at Holyoke, Mass., and Brattleboro, Vt., are operating on full time against a schedule of two to three days a week for several months. R. A. Witherell, general manager and treasurer, reports that the sharp upturn in orders is the direct result of a new merchandising policy decided upon at a recent conference of the officers and directors.

International Heater Co. Recalls 200 Men

The International Heater Co. of Utica, N. Y., resumed operations several weeks ago after a shutdown of seven weeks. Two hundred men were re-employed.

Carrier-York Corp. Moves Its General Offices

Carrier-York Corporation has moved its general offices to the Philadelphia Savings Fund building at 12 South Twelfth street, Philadelphia, Pa.

Thomas Devlin Mfg. Co. Increases Production

The Thomas Devlin Mfg. Co. of Burlington, N. J., manufacturer of iron castings and fittings, has increased its production schedule from three to five days a week and is planning the early establishment of extra working shifts.

Turner Supply Co. Taken Over by Desco Corp.

The business of the Turner Supply Company of Chester, Pa., has been taken over by the Desco Corporation of that city, and George W. Thomson, president, and Thomas McDougal, treasurer, respectively, of the former concern, have purchased an interest in the Desco Corporation and will be active in the management of its business. H. J. Bailey is president of the Desco Corporation which handles plumbing, heating and industrial supplies.

Richardson & Boynton Co. Resumes Operations in Three Plants

The manufacturing plants of the Richardson & Boynton Co. at Buffalo, N. Y., Dover, N. J., and Utica, N. Y., resumed operations last month after an extended mid-year shutdown. The reopening of the plants restores hundreds of men to employment in each plant.

Adds Air Conditioning Machinery to Its Products

The Foster-Wheeler Corporation of 165 Broadway, New York, N. Y., has just added a line of air conditioning machinery to its products.

Will Manufacture Iron Castings

Ferguson & Lange Foundries, Inc., 1039 Willow street, Chicago, have been incorporated with a capital of $50,000, to manufacture iron castings. The incorporators are Louis Weckerley and Ray M. Northrup.

Otto Bernz Co., Inc., Moves to Rochester, N. Y.

Otto Bernz Co., Inc., manufacturer of plumbers' tools since 1876, has moved its factory and office from Newark, N. J., to 280 Lyell avenue, Rochester, N. Y., where the entire management and production personnel will be located. The company announces the purchase and installation of additional machinery and equipment.

Wm. B. Scaife & Sons Co. Buys Air Tight Steel Tank Co.

The Wm. B. Scaife & Sons Co. of Pittsburgh, Pa., has purchased the good will, machinery and certain other assets of the Air Tight Steel Tank Co. in that city. Robert E. Cecil, president of the latter organization for about 20 years, has become associated with the Scaife company as assistant vice president in charge of sales.

Incorporated to Manufacture Floor and Roof Drains

Fleming Manufacturing Company of 317 North Wells street, Chicago, has been incorporated with a capital of $50,000, to manufacture and sell floor and roof drains. The officers of the company are: W. S. Fleming, president; A. J. Brielmaier, vice president, and E. H. Webster, treasurer and secretary.

Appointed Distributors for Hammond Brass Works

Evins F. Glore & Son, Inc., of New York City have been appointed exclusive distributors in the New York metropolitan territory for the Hammond Brass Works, Hammond, Ind., manufacturers of radiator valves, brass gate valves, and compression stop and stop and waste valves.

The Glore Co. has also been appointed exclusive distributors for the Hammond Brass Works' products in Philadelphia, eastern Pennsylvania and southern New Jersey, through the medium of Derbyshire, Mack & Morgan, Inc., of Philadelphia.

A complete stock of the above products will be maintained at the warehouse of Evins F. Glore & Son, Inc., at Manley street and Anable avenue, Long Island City.

Super Re-Seater Mfg. Co. Ready for Business

The Super Re-Seater Mfg. Co., which was recently organized to manufacture re-seaters and removable seats for re-seating valves, combination fixtures and faucets, has started operations and has opened a main sales office at 5005 Euclid avenue, Cleveland, Ohio. Joseph Hirshstein, president of the Josam Mfg. Co. of Michigan City, Ind., is also president of this new company.

Will Manufacture Clamps and Other Specialties

The Carson Cadillac Corporation of Cadillac, Mich., has been incorporated with a capital stock of $20,000 preferred, and 1,000 shares of common stock at $5 per share, to manufacture pipe clamps and other pipe joint specialties.

Chas. Parker Co. Acquires Artistic Bronze Co.

Charles Parker Co. of Meriden, Conn., has acquired the business of the Artistic Bronze Co. of Bridgeport, Conn., and will remove the equipment to its plant at Meriden, where production will be concentrated. William W. Wright, heretofore president of Artistic Bronze Co., will become a vice president of Parker company, with headquarters at 101 Park avenue, New York City.

Will Manufacture Heating Equipment

Chicago Steel Heater Co. has been organized to manufacture heaters and heating equipment and has opened offices at Room 2400, 100 North La Salle Street, Chicago, Ill. Carl Sitarz and Samuel W. Kipnis are at the head of the new venture.

Boiler Mfg. Plant Recalls Workers

The General Electric Co. of Pittsfield, Mass., has recalled a number of workers in the boiler manufacturing division in its local plant in that city. This division is now run on a capacity schedule.

Ontario Supply Co. Partnership Dissolved

Fred J. Sommers and L. V. Agostini, Jr., conducting a plumbing and heating supply business under the name of Ontario Supply Co. at 1826 East Ontario street, Philadelphia, have dissolved their partnership by mutual consent, and the business has been taken over by L. V. Agostini, Jr.

Interstate Sales Co. Organized

Carvel C. Bramblett and John C. McCubbin have formed a partnership under the name of the Interstate Sales Co., with offices at 404 Bona Allen building, Atlanta, Ga., representing several manufacturers of plumbing and mill supplies. Mr. Bramblett has been manufacturer's agent for several years, and Mr. McCubbin was formerly southeastern sales manager for the Standard Sanitary Mfg. Co.

Now in Its New Building

The Heating Specialties Co. of Rochester, Minn., has moved into its new building at 1121 North Broadway.

New Officers for D. A. Ebinger Sanitary Mfg. Co.

Roger E. Williams is now president of the D. A. Ebinger Sanitary Mfg. Co., Columbus, Ohio. He succeeds D. H. Ebinger who resigned July 13. F. J. Heer has just been elected vice president and chairman of the board of directors. G. S. McKee, is now vice president and works manager. He was formerly with the Timken Roller Bearing Co. as assistant works manager and with the Grigsby-Grunow Co. as superintendent of the refrigerator division. E. E. Fox who is vice president and treasurer has been appointed secretary, succeeding the late Aden E. Smith.

Logansport Radiator Equipment Co. Re-Employs 125 Men

Logansport Radiator Equipment Co., Logansport, Ind., manufacturer of steam radiators, parts, etc., has resumed operations following curtailment for three and a half months, reinstating about 125 men.

York Oil Burner Co. Enlarges Its Working Force

York Oil Burner Co., York, Pa., manufacturer of oil burners and oil-burning equipment, has increased its production schedule with larger working force.

Joseph M. Imfeld Co. Organized

Joseph M. Imfeld Co. has been organized to manufacture plumbers' tools and has started in business at 56 Lindsley avenue, Newark, N. J. Joseph M. Imfeld was associated with Otto Bernz Co. for twenty-two years and until the death of Mr. Bernz several months ago. He was manager of the Bernz Co. for the past eighteen years and he was also secretary for the last ten years.

Announce Appointment of New Representative

The products of the Kewanee Boiler Company, Inc., of New York and the Fitzgibbons Boiler Company, Inc., of New York, will be distributed in the western New York territory including the cities of Buffalo and Rochester and several counties in northwestern Pennsylvania by William Heagerty. His offices will be at 315 Davidson avenue, Buffalo.

Names Three Representatives

The Perfex Corporation, Milwaukee, Wis., manufacturer of unit heaters, has recently announced the appointment of three new sectional representatives. The St. Louis territory has been assigned to O. H. Wolff, 6228 Oakland Ave., St. Louis. The Cleveland territory has been taken over by the Air Equipment & Supply Co., of Cleveland, and F. O. Glas has been appointed at Milwaukee.

Appointed Representative in Buffalo

The Davis Engineering Corporation, New York City, manufacturer of domestic water heaters, announces the appointment of Buffalo Nipple & Machine Co., 335 Glenwood avenue, Buffalo, N. Y., as its representative in Buffalo.

Death of Isidor Weil

Isidor Weil, president of the Weil-McLain Co., Chicago, died on Sept. 2. He had been in failing health for some months. He was 65 years of age, having been born on May 10, 1867. The funeral was held on Sept. 4 in Chicago. The respect and friendship which Mr. Weil had won through his more than 40 years in the plumbing and heating business was attested by the large number who attended. These included not only manufacturers and wholesalers but many of his customers in the contracting field. A number of friends from distant cities were at the funeral services.

Isidor Weil

Mr. Weil entered the business by selling plumbers' tools, leading in 1892 to the formation of Weil Bros. as a wholesaling firm. His death thus occurred just 40 years after his definite entrance into the jobbing business. An important step in expansion of the firm's activities took place in 1915 with the purchase of the Hoosier City Boiler Mfg. Co., Indianapolis, Ind., manufacturer of a steel boiler which Mr. Weil had been wholesaling. He then organized a subsidiary company, the Weil Boiler Co., but in 1917 sold the boiler to the Kewanee Boiler Co., Kewanee, Ill. In 1918, Mr. Weil purchased control of the J. H. McLain Co., Canton, Ohio, boiler manufacturer, and this company and Weil Bros. were dissolved and the Weil-McLain Co. formed in 1920.

The boiler manufacturing plant was moved to Michigan City, Ind., in 1920 and a radiator manufacturing plant was built in Erie, Pa., about five years ago. The activities of the Weil-McLain Co., thus embrace Mr. Weil's accustomed lines of wholesaling as well as the manufacture and sale of boilers and radiators.

Mr. Weil was always an active worker for the industry, recognized by his associates through his selection as a board member of various organizations and by his selection as president of the Central Supply Association in October, 1926. His son, Martin Weil, has been

KOVEN
QUALITY CODE

No. 1—

SPECIFICATIONS

● Strict adherence to the KOVEN Specifications, is the first requisite in the manufacture of any KOVEN Quality Product.

● Regardless of fluctuating market conditions, close competition or the introduction of inferior products to the trade . . . THESE SPECIFICATIONS ARE NEVER CHANGED!

● This first rule of the KOVEN Code assures the user that KOVEN Quality Products

—Are Uniform in Strength

—Give Satisfactory Results

—Last Longer

—Are absolutely safe for specified working pressure

● Get after your customers NOW—before they "turn on the heat"—to replace old, clogged, slow-heating range boilers and tanks with KOVEN Range Boilers or Storage Tanks.

Other KOVEN Products:

Range Boilers
Storage Tanks
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Expansion Tanks
Pneumatic Tanks
Barber Boilers
Scullery Sinks

●

L. O. KOVEN & BRO., Inc.
154 Ogden Avenue
JERSEY CITY, N. J.

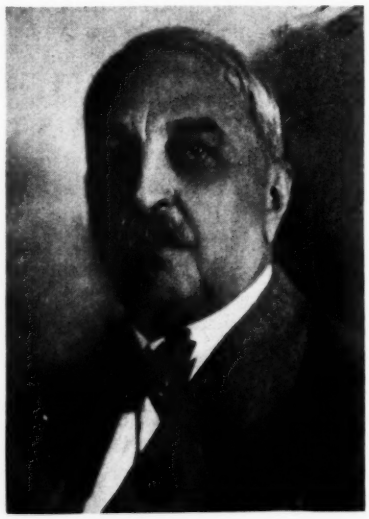
active in the executive affairs of the company for a number of years as have also his brother Benjamin Weil and his son-in-law, Harry N. Misch. He is also survived by his widow and daughter.

Death of P. A. Myers

Philip Andrew Myers, president of F. E. Myers & Bro. Co., Ashland, Ohio, died Friday morning, Aug. 5, at Wade Park Manor in Cleveland, where he had been critically ill since the first of August, when he sustained a heart attack. Mr. Myers had been in failing health since Decoration day, when he was injured in an automobile accident near Ashland.

Philip A. Myers was born August 14, 1853, on a farm, six miles east of Ashland, Ohio. He worked on his father's farm and also attended Smithville Academy until he was 21, when he accepted an offer from his brother, F. E. Myers, of $20 a month to serve as salesman in his implement business, furnishing his own horse and buggy.

His horse and buggy salesmanship was a great success; calling on the farm trade he not only sold agri-



P. A. Myers

cultural implements but also repaired them when necessary. Soon he became a partner in the business, which was then continued under the name of F. E. Myers & Brother.

In his spare time he worked in the service shop, and it was here that he perfected his first patented invention, a double-action force pump, in 1879, which at that time was a great advance in pumps. Other inventions followed with the result that the firm established its own factory in 1882. At this period P. A. Myers spent most of his time in his laboratory and secured dozens of patents, as improvements were made on the firm's pumps and agricultural implements. He continued to evolve new mechanical ideas until recently, when ill health kept him from the factory. More than 100 patents resulted from his inventive genius.

The business grew continually, and it is now not only

Ashland's largest industrial concern but one of the country's best known manufacturers. It was a partnership until 1921, when it was incorporated.

Throughout the period during which both brothers were living, F. E. Myers was in charge of finances and sales, while P. A. Myers was the inventor, factory organizer and producer. Upon the death of F. E. Myers in 1923, P. A. Myers became president. In recent years he placed the responsibility for executive details upon the younger shoulders of his son, Guy Chase Myers, and his nephew, John Myers, and other officials, but he maintained active direction of the company.

In his passing, Ashland has lost one of its most valuable citizens. Always unwilling to permit any of his numerous philanthropies to be made public, little is generally known of his many generous gifts. The only gift which he permitted to become known was that of 9 acres of land known as Myers Athletic Field, under the control of the Y. M. C. A. This gift of a $55,000 playground was made in the spring of 1928, but it is also known that he was a generous supporter of the Ashland College.

He was a director and vice president of Faultless Rubber Co. and of the First National Bank, both of Ashland, and director of many other concerns. He was a member of the Ashland Country Club and several other clubs and societies.

His wife, a son, a daughter, three grandchildren, two brothers and three sisters survive him.

Death of George D. Hoffman

The heating industry will learn with sincere regret of the death September 5th of George D. Hoffman, president of the Hoffman Specialty Company, Inc., at his

George D. Hoffman

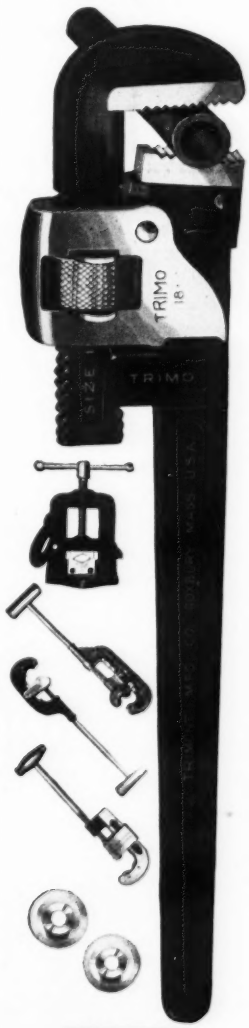
home in Pasadena, Cal. At the age of 74, his passing marks the end of a career rich in friendships and notably successful in his chosen field.

Mr. Hoffman was born in Chicago, educated as a heating engineer and associated all his life with the heating industry. He perfected and patented the Hoffman Air

TRIMO

gives you the advantage

in these highly competitive days



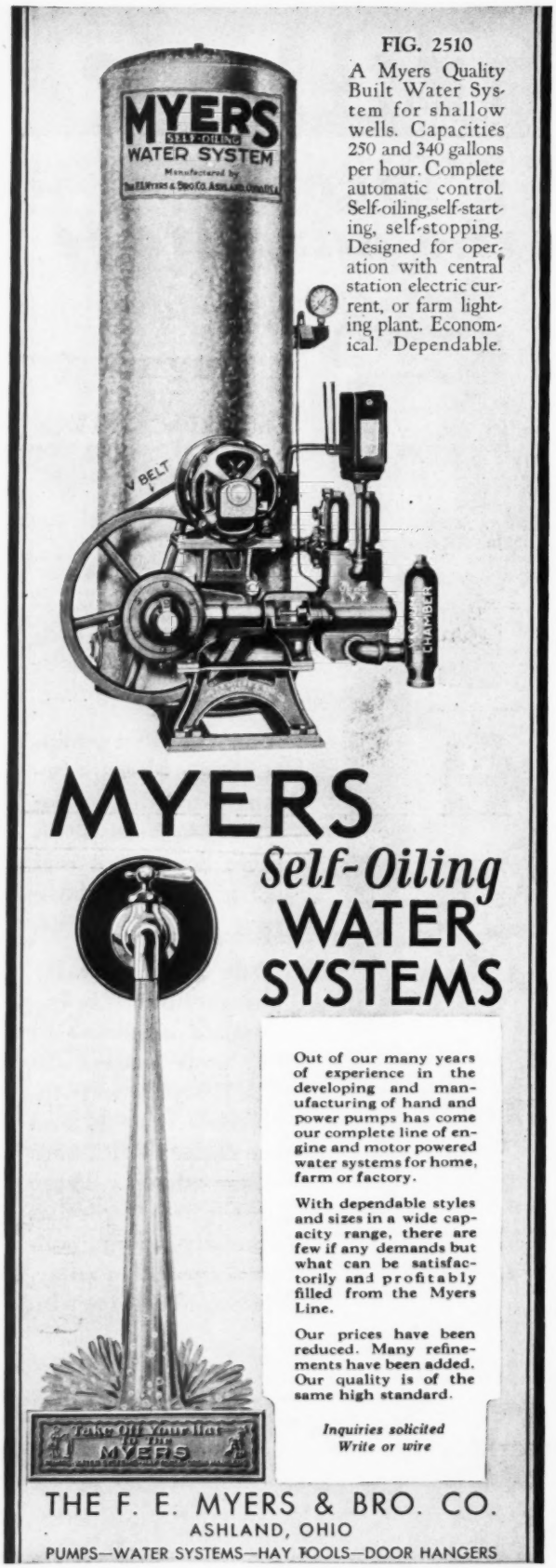
YOU can do faster work, better work—and, in the long run, lower cost work with TRIMO pipe tools.

Keep your tool equipment up where it belongs—at full wartime strength, because in these days it's a real battle to get the business and the profits.

Your TRIMO dealer has put himself in immediate readiness to fill your orders on TRIMO pipe wrenches, vises, cutters and the famous TRICROME *faster* wheels. These are the finest tools that you or your competitors can obtain today. You need them to win.

TRIMO TOOLS

Made for 50 years by Trimont Mfg. Company
Roxbury, Boston, Mass.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WATER SYSTEM
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Out of our many years of experience in the developing and manufacturing of hand and power pumps has come our complete line of engine and motor powered water systems for home, farm or factory.
With dependable styles and sizes in a wide capacity range, there are few if any demands but what can be satisfactorily and profitably filled from the Myers Line.
Our prices have been reduced. Many refinements have been added. Our quality is of the same high standard.
Inquiries solicited
Write or wire
Take Off Your Hat to the MYERS
THE F. E. MYERS & BRO. CO.
ASHLAND, OHIO
PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS

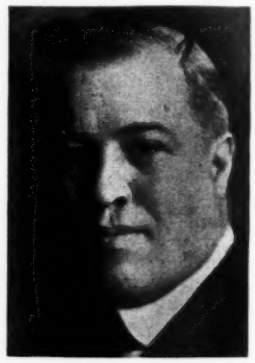
FIG. 2510
A Myers Quality Built Water System for shallow wells. Capacities 250 and 340 gallons per hour. Complete automatic control. Self-oiling, self-starting, self-stopping. Designed for operation with central station electric current, or farm lighting plant. Economical. Dependable.

Valve, and in 1913 organized his own company for the manufacture of these valves and other heating specialties.

Although always keenly interested and in touch with the affairs of his company, Mr. Hoffman has for some years lived in Pasadena, where he was principally engaged in developing an electrical heating appliance and marketing it on the West Coast.

The present executives of the Hoffman Specialty Company, Inc., will continue its management on the same policies originally laid down by its founder.

George B. Baldwin



George B. Baldwin

George B. Baldwin, vice president and sales manager of the Detroit Brass & Malleable Works, Detroit, Mich., died suddenly of heart disease on Saturday, August 13, at his summer cottage at Colchester, Ontario, Canada, and was buried four days later, on August 17, at St. Paul, Minn. Mr. Baldwin was born 50 years ago at Tiverton, Rhode Island. He started as an office boy with the Walworth Co., Boston, Mass., and worked up to an executive position. He later went to Birmingham, Alabama, to be sales manager of the Stockham Pipe and Fittings Co. In 1929 he came to Detroit to be sales manager of the Detroit Brass & Malleable Works, later becoming vice president and director. He was widely known in the jobbing and fitting business. Mr. Baldwin was a member of the Winslow Lewis Lodge, F. & A. M., of Boston. He is survived by his wife, a sister and two brothers.

William G. Shafer

William G. Shafer, president of W. G. Shafer Co., Inc., plumbing and heating supply house at 813 Erie Boulevard, East, Syracuse, N. Y., died on September 2, following a heart attack while driving from his office to his home at 205 Hampton road.

George P. Smith

George P. Smith, Chicago branch manager of the Herman Nelson Corp., Moline, Ill., died August 8.

Mr. Smith was born Nov. 7, 1874 in Joliet, Ill. Before joining the organization of the Herman Nelson Corporation he was associated with Poehner & Dillman, plumbing and heating contractors in Joliet; was manager of the heating department of the Western Plumbing Supply Co. of Chicago, and later was manager of the heating department of the Mine & Smelter Supply Co. of Salt Lake City, Utah. In 1918, Mr. Smith left the Mine & Smelter Supply Co. to represent the Herman Nelson Corporation in Salt Lake City. From that office he was transferred to the company's Chicago branch.

Radiator Specialty Co. Anticipates Business Improvement

The Radiator Specialty Co., Charlotte, N. C., manufacturer of a boiler sealing compound, has recently added to its sales force in anticipation of a distinct improvement in business.

X-Pando Co. in New Location

The X-Pando Company has moved its office and factory to 10-28 Jackson avenue, Long Island City, N. Y.

Clint E. Beery Named Middle West Representative for Spencer Heater

The Spencer Heater Co. has named Clint E. Beery as its representative in Chicago. Mr. Beery, who is a veteran of the low pressure boiler field, was the organizer of the Mid West Stoker Association. He has been one of the leaders in the development of sound standards in stoker engineering and merchandising.

From 1910 to 1920, Mr. Beery was chief engineer for the Rockford, Ill., board of education and in that period developed the down-draft ventilation system for schools. For ten years following this, he was connected with the sales department of the Kewanee Boiler Corp. A great part of his work since 1920 has been of an educational nature, including writing for technical publications on heating and he has been much in demand as an informative speaker before heating associations and civic clubs.

Spencer Heater Company expects to enter the Middle West territory actively with a specially developed product for these States soon.

Mr. Beery is in charge of the Chicago office of Spencer Heater Co. which was opened about Sept. 1. A branch will also be opened at Milwaukee under the supervision of Mr. Beery.

Tri-City Plumbing and Heating Trade Holds Annual Picnic

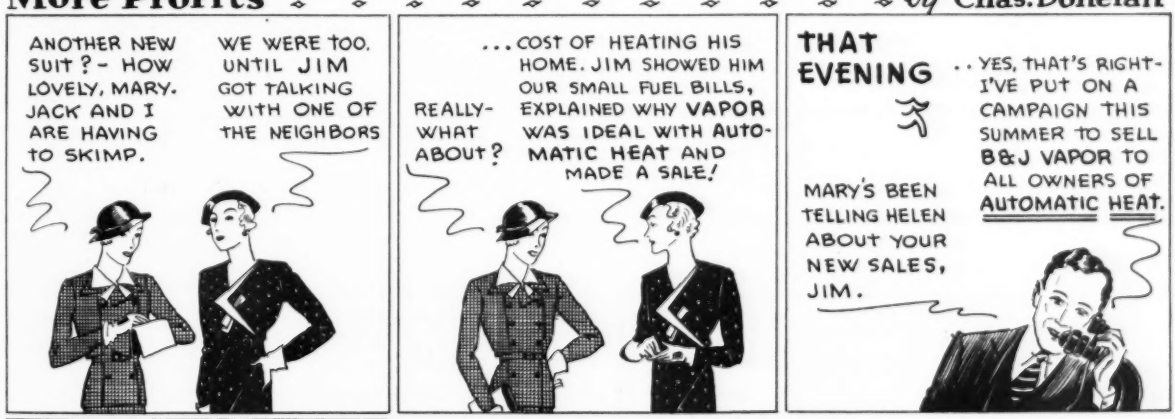
The Tri-City Plumbing and Heating Development League held its sixth annual picnic at Credit Island, Davenport, Iowa, on Wednesday, August 24. Three hundred members of the League and their friends were in attendance. Coffee and ice cream were served to the picnickers during the day.

Among the outstanding features of the day were card games for the ladies. Sixteen persons, seven from Davenport, four from Rock Island, and five from Moline, received attendance prizes.

Milwaukee Master Plumbers Open Fall Season

Milwaukee Master Plumbers' Association opened its fall series of business and educational meetings the first Tuesday in September. Hereafter meetings will be held the first and third Tuesday in each month to the end of the fiscal year.

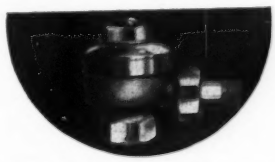
More Profits ... by Chas. Donelan


ANOTHER NEW SUIT? - HOW LOVELY, MARY. JACK AND I ARE HAVING TO SKIMP.
WE WERE TOO, UNTIL JIM GOT TALKING WITH ONE OF THE NEIGHBORS
REALLY- WHAT ABOUT?
...COST OF HEATING HIS HOME. JIM SHOWED HIM OUR SMALL FUEL BILLS, EXPLAINED WHY VAPOR WAS IDEAL WITH AUTOMATIC HEAT AND MADE A SALE!
THAT EVENING
..YES, THAT'S RIGHT- I'VE PUT ON A CAMPAIGN THIS SUMMER TO SELL B&J VAPOR TO ALL OWNERS OF AUTOMATIC HEAT.
MARY'S BEEN TELLING HELEN ABOUT YOUR NEW SALES, JIM.
...AND IT'S WORKED! TAKE A TIP, TRY IT YOURSELF- BUT STICK TO B&J!... ..IT GOES IN AND STAYS!
B&J, YOU SAID - I'LL SEND FOR THE FACTS TONIGHT!

9-32

Every owner who has installed or is planning to install Automatic Heat is a live prospect for Vapor. Sell them, but protect your profit—install B & J vapor equipment. It's built to go on the job and stay. Bulletin ?— mail coupon.

BARNES & JONES Inc.
127 Brookside Ave. Boston, Mass.



Send, without obligation, bulletin 127.

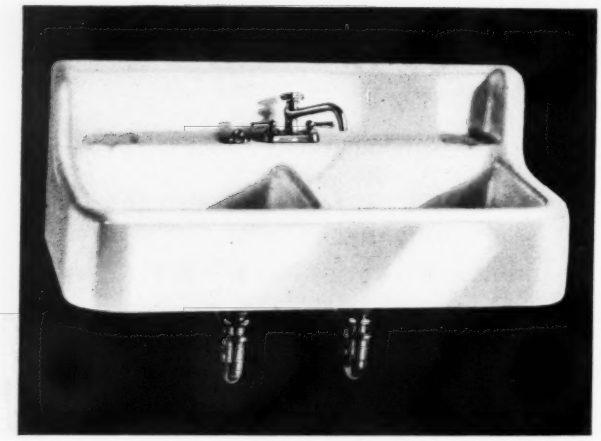
NAME.....

COMPANY.....

STREET.....

CITY.....STATE.....

523



A new Kohler Double Compartment Sink... to sell at a new low price!

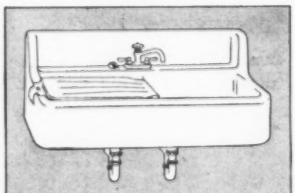
BOTH the low price and the great convenience of this useful and practical sink will make new friends for you. Two 8-inch-deep compartments give *double* the ordinary working room without taking up any more kitchen space. With the special Kohler drainboard, the housewife can keep dishes, pans and vegetables hidden under cover until needed. Space saved, time saved, convenience increased!

Yet with all its advantages, this new Kohler sink is priced right in line with what people can pay—and still provide a satisfactory profit for you. Manufacturing economies have helped us lower the cost.

The chromium-plated drainboard fits over either compartment. When not in use it hangs from the rim, out of the way. A ledge extending clear across the back of the sink provides ample space for soap, powder, brushes, and tumblers. Handsome fittings include the compact chromium-plated mixing faucet which swings *above* the other handles. There is also a disappearing hose in the ledge, and a Duo-strainer drain control in each compartment. Two depressed dishes in the ledge to keep soap within easy reach.

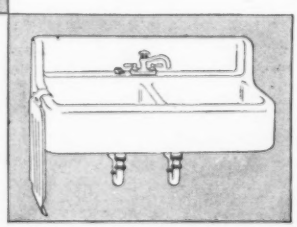
From any standpoint, this is a great value. Kohler Co. *Founded* 1873. Kohler, Wis. *Branches in principal cities.* ... Show them the Kohler name on each fixture and fitting.

REMOVABLE METAL DRAINBOARD



LEFT—*Metal drainboard fits either compartment —provides ample working and storage room.*

RIGHT—*When not in use, the drainboard hangs at the side of the sink, out of the way.*



KOHLER U.S.A.

KOHLER OF KOHLER

PLUMBING FIXTURES AND FITTINGS

Plumbing Industry Human Relations Committee Arranges Course of Lectures

The Plumbing Industry Human Relations Committee of Peoria, Ill., which was organized two months ago and which is holding weekly meetings every Tuesday noon, has just announced a course of lectures to be given at 7:30 p. m. in the Assembly Room of the Central Illinois Light Co., 316 South Jefferson avenue, Peoria, Ill., on the subjects, by the speakers and on the dates given here:

"Specifications, Estimates and Bids," by John Robb of Peoria, September 20.

"Extending Credit, Collections, Liens, Judgments and Suits," by Mark Hay of Hay Collections Bureau of St. Louis, Mo., October 4.

"Gas Furnaces, House Heating and Air Conditioning," by Roy M. Moffitt, heating and ventilating engineer of Milwaukee, Wis.

"Publicity and Your Plumbing Shop as a Showroom," by George Westerman, Commonwealth and Southern Corporation, Jackson, Mich.

The personnel of the Plumbing Industry Human Relations Committee is composed of the following gentlemen: Chairman W. W. Hitchcock, Hitchcock Sprinkler & Heating Co., representing the Master Plumbers' Association; Secretary John E. Bogan, in charge of Public Relations, Central Illinois Light Co.; L. H. Haverton, Nailon Corp.; L. J. Peterson, Inland-Peoria Supply Co.; A. Schader, Standard Sanitary Mfg. Co.; Mahler Wilson of Kinsey & Mahler Co.; Hugh Marshall, executive secretary of the Master Plumbers' Association, and John Robb, all of Peoria, Ill.

The aim of this committee is to find a satisfactory answer to the question: "How can the plumbing and heating industry secure the profit warranted by the great value of its services?"

New York Plumbing and Heating Golfers Meet at Elmsford Country Club

The Plumbing and Heating Golf Association of New York held its August meeting at the Elmsford Country Club, Elmsford, N. Y. on August 23. The following are the scores:

Class A	G.	H.	N.	Class B	G.	H.	N.
McGuire	84	14	70	Foster	99	32	67
Denicke	86	11	75	Doncourt	107	22	85
Murphy	100	16	84	Mork	102	28	74
Weil	89	20	69	Brutschy	116	35	81
Warth	96	16	80	Schwartz	98	23	75
Garrity	93	12	81	Forgan	104	23	81
Kjerner	85	3	82	Mittleman	102	35	67
Smolka	104	20	84	Lieblich	97	30	67
Powers	81	9	72	Layer	122	27	95
Duklauer	94	13	81	Jarcho	102	26	76
Kelly	101	12	89	Cowles	No card		
O'Neill	84	11	73	Ryan	106	26	80
Woods	100	22	78				

Guests: Sam Fassler, 94; Edwards, 104; Carmer, 83.

Prize Winners

		G.	H.	N.			G.	H.	N.
Weil*	A	89	20	69	Lieblich	B	97	30	67
McGuire	A	84	14	70	Forster	B	99	32	67
Powers	A	81	9	72	Mittleman	B	102	35	67
O'Neil	A	84	11	73	Mork	B	102	28	74
Denicke	A	86	11	75	Schwartz	B	98	23	75
Woods	A	100	22	78	Jarcho	B	102	26	76
Warth	A	96	16	80	Forgan	B	104	23	81
					Sam Fassler (Guest Prize)				

* Mr. Weil won the president's trophy.

Business Personals

L. C. MITCHELL, president and general manager of J. B. Wise, Inc., of Watertown, N. Y., has been elected vice president of the Refrigerated Display Case Corporation which was recently organized in that city.

C. W. JOHNSON, of C. W. Johnson, Inc., Chicago, has been appointed treasurer of the Chicago Master Steamfitters Association, to fill the vacancy caused by the recent death of George Mehring. Mr. Mehring was treasurer of this organization for the last ten years.

M. F. Cotes

H. F. HARPER, president of Motor Wheel Corporation, Lansing, Mich., announces the appointment of M. F. COTES as sales director of the corporation's heater division, manufacturing a line of oil-burning utilities. The new merchandising executive has been a prominent figure in the oil heating industry for a number of years, as president of the Draft-A-Justor Corporation, and more recently, since 1929, as president and active sales head of the Quaker Manufacturing Co., Chicago, maker of oil-burning space heaters. In his new position, Mr. Cotes will control all merchandising activities of the growing heater divison including automatic weather control units, boiler units for steam and hot-water heating, water heaters, ranges and other oil-burning apparatus. C. L. STEBBINS, sales manager, and R. E. MULVOGUE, advertising and sales promotion manager, will continue their work with the heater division.

FRED W. GATTER, sales manager of McIlvaine Burner Corporation, Evanston, Ill., has returned to the factory from a three weeks' business trip through Wisconsin, Iowa, South Dakota and Minnesota.

CHARLES S. MARTIN has been appointed general manager of the M. & H. Valve & Fittings Co., Anniston, Ala. The plant is being reconditioned in anticipation of larger orders through improvement of general business conditions. Mr. Martin has been president of the Woodstock Operating Corporation and the Woodstock Iron & Steel Corporation. He has been active in manufacturing in Alabama and in Indiana. For many years, he was interested in the Northern Indiana Brass Co., manufacturer of plumbing supplies and fittings.

HARRY D. SPROWLES and RALPH M. SPROWLES have just been appointed representatives for the Eastern Foundry Co., of Boyertown, Pa., in the Philadelphia and surrounding territory. They will handle the sales of the company's boilers. Harry Sprowles has been in the heating business for 25 years in that territory. Ralph M. Sprowles also has been handling boiler sales in the

This NEW Catalog Tells You. . .

Full information about two new Weis developments for shower bath installations, plus a complete presentation of the Weisway and Weistall cabinets, will be found in Catalog 32, a copy of which may be had for the asking.

This new catalog should be of great assistance to you in turning remodeling prospects into sales. Color presentations portray the beauty of Weis equipment, and the thorough-going explanation of construction, amply illustrated, provides all the technical information any prospect can want. Code words for telegraphic use, and roughing in suggestions are included also.

No enterprising master plumber who is fighting for business can afford to be without this catalog constantly at hand. Ask your jobber, or write to us, naming your jobber, and a copy will be sent you promptly and without cost or obligation.

HENRY

Established WEIS 1876

MANUFACTURING CO., INC.

ELKHART, IND.

east for a number of years. Their offices will be in the Drexel building, Fifth and Chestnut streets, Philadelphia.

J. W. SPEER, formerly manager of machinery electrification in the industrial department of Westinghouse Electric and Manufacturing Co. of East Pittsburgh, Pa., has been appointed manager of commercial air conditioning products of the company with offices at the East Pittsburgh Works.

J. W. Speer

LEROY P. HAMLIN has been appointed representative for the auxiliary water heater line of the Harrison Mfg. Co. of Philadelphia, Pa., in the Maryland and Washington, D. C., territory. Mr. Hamlin's headquarters are at 117 South Poppleton street, Baltimore, Md.

F. L. PHILLIPS has been appointed purchasing agent for Thermoil Heaters, Inc., Benton Harbor, Mich.

ALBERT PENN, president of the Penn Electric Switch Co. of Des Moines, Iowa, announces the appointment of E. W. Carr, Inc., 807 Howard street, New Orleans, La., as manufacturer's representatives in all of Louisiana and the southern half of Mississippi for the company's line of controls, which include refrigeration, air compressors, and pumps.

LAWRENCE S. BURKE, who has been connected with the Riverside Boiler Works, Inc., of Cambridge, Mass., for the last sixteen years, has severed his connection with this concern and has purchased an interest in the Boston Steel & Manufacturing Co. at Malden, Mass.

A. MITCHELL, JR., has been appointed representative for the Never Split Seat Co. of Evansville, Ind., the Imperial Brass Mfg. Co. of Chicago, and the Chicago Faucet Co. of Chicago. His headquarters are at 249 Central Avenue, Albany, N. Y.

JOHN B. FOLEY, JR., has been appointed representative in Syracuse, N. Y., and vicinity for Coppus Engineering Corporation of Worcester, Mass. His headquarters are at 510 Hills building, Syracuse, N. Y.

GUY VOORHEES of Indianapolis, Ind., has joined the sales force of Lakeside Company, manufacturer of air conditioning equipment at Hermansville, Mich., and will be sales engineer in the state of Indiana. This company has now twenty-seven direct factory representatives.

NELSON DELEVAN, sales manager of the Penn Electric Switch Co., of Des Moines, Iowa, has just returned from an extended trip covering the United States with R. D. Marshall, special representative of the president of the Williams Oil-O-Matic, and Earl Nesbitt, chief engineer. Mr. Marshall and Mr. Nesbitt have been conducting dealer schools at which Mr. Delevan discussed the products of his company.

Saves your time in changing discs

"This slip-on stay-on disc holder sure is a time-saver"

NOTE the slip-on stay-on disc holder shown to the left—a time-saving convenience. To renew the disc, you merely slip off the disc holder and slip on a holder containing a new disc. Furthermore the disc in the old holder can be renewed at leisure.

Here is a real advantage when changing the disc. Before unscrewing the bonnet, give the hand wheel a turn or so. Then the one-piece bonnet holds the disc holder on the spindle. You can't shake it off. But a reverse turn of the wheel will cause the disc holder to drop into your hand.

This valve possesses other features you will approve of. Ask your supply house about them or write for Bulletin 141. Jenkins Valves of this type are made in globe, angle, cross and check patterns.

Jenkins
BRONZE IRON STEEL
VALVES
Since 1864

JENKINS BROS.

80 White St., New York, N. Y., 510 Main St., Bridgeport, Conn., 524 Atlantic Avenue, Boston, Mass., 133 No. Seventh St., Philadelphia, Pa., 646 Washington Blvd., Chicago, Ill.

JENKINS VALVES ARE ALWAYS MARKED WITH THE "DIAMOND"

Cleaning —

(Continued from Page 41)

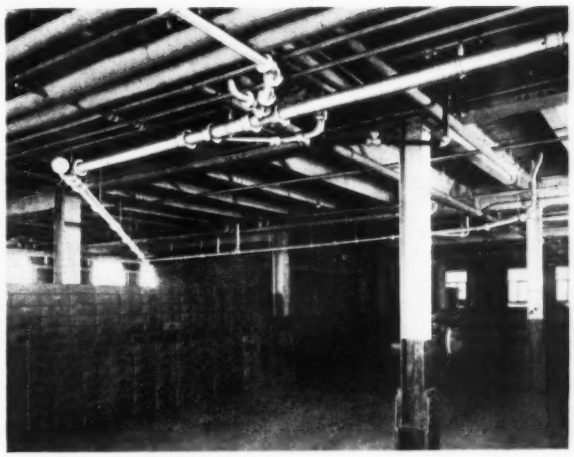
heating system or equipment.

Carelessness also figured in the faulty equipment classification, since dirt, fly-ash deposits, leaks and burned-out grates are manifestly evidence of lack of common sense attention. Soot, for instance, which any person can easily scrape off, accounted for 16 per cent of the trouble uncovered. Leaks in smoke-pipes and chimneys which are easily caulked up with iron cement, were an important factor in the 18 per cent of pipe and chimney defects found. Their existence indicates carelessness on the part of the owner.

Even though Anthracite, with its low volatile content, spreads a very thin deposit in comparison with bituminous and coke, soot and fly-ash are highly efficient insulators, some eight times as effective as asbestos. Anthracite Institute engineers, therefore, recommend thorough cleaning of the heating surfaces once a year. The experience of these engineers indicates that a heating plant burning anthracite with three years accumulation of soot and fly-ash had lost about 10 per cent of its efficiency.

The break-down of the findings in the 5,000 homes visited follows:

Classification	Causes	Ocurrences	Percent of Total
1. Faulty equipment — 62% of total	(a) Smokepipe, leaks, dirt construction	1145	12
	(b) Chimney, construction, obstructions, leaks, size	572	6
	(c) Boilers and heaters, undersize, erection	668	7
	(d) Soot on heating surfaces of boilers and furnaces	1526	16
	(e) Oil in water, steam boilers	191	2
	(f) Radiators, air-bound or otherwise obstructed	382	4
	(g) Hot water and steam piping, layout, pitching, etc	286	3
	(h) Warm-air systems, general arrangement, including warm-air flues and cold-air supply	573	6
	(i) Thermostats	191	2
	(j) Grates	191	2
	(k) Miscellaneous	191	2
2. Method of firing and general operation 26% of total	(a) Disturbing of fuel bed	191	2
	(b) Carrying fire at wrong depth	477	5
	(c) Manipulation dampers	1145	12
	(d) Operation of grates	191	2
	(e) Size of fuel being used	954	10
	(f) Not maintaining proper water line in steam boilers	191	2
	(g) Accumulation of ashes	191	2
	(h) Miscellaneous	95	1
3. Quality of coal—2% of total.	(a) Excessive degradation	95	1
	(b) Excessive slate and bone or other foreign matter	95	1
	Total number of occurrences	9541	100



Heinz takes no chances. Duriron drain-pipe carrying acid wastes from one of the "Quality Control Laboratories" of The H. J. Heinz Co. Duriron pumps, valves, fans and other equipment are also used by the makers of "57 Varieties" of Pure Food Products.

A LOT OF PLUMBERS ARE MAKING MONEY THIS WAY.....

When the drain-pipe is eaten away by corrosion . . . what do you do?

Replace with Duriron, of course! There's more satisfaction to your customer and more money in the job for you.

Battery rooms, plating plants, photographic studios, engraving plants, hospitals, school and college laboratories, medical buildings, soda fountain drainage . . . wherever corrosive wastes occur, there Duriron should be installed.

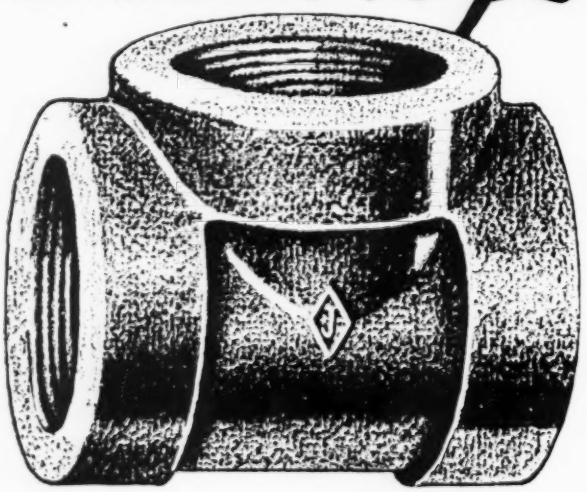
Duriron is installed just like extra heavy cast iron soil pipe, with calked joints. It is acid proof all the way through.

Quick shipments from complete stocks. Write for Bulletins.

THE DURIRON COMPANY, INC.
410 N. Findlay St. ◆ Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

JARECKI
Fittings



Look closely at a Jarecki Fitting. Notice the clean-cut threads, close grained metal unusually free from defects, and the extra strength embodied in the design. Such quality standards don't "just happen." They are the result of a fixed policy calling for modern methods and machinery, careful selection of metals and rigorous inspection.

JARECKI
MANUFACTURING COMPANY
Erie, Pa. U. S. A.

Passaic Master Plumbers' 39th Annual Outing

The Passaic Master Plumbers' Association held its 39th annual outing August 11th at Blasberg's Farm, Hawthorne, N. J., together with the families of the members and many guests.

Roy J. Schleich, chairman of the outing committee, was assisted by Allen Blair, Samuel Schneider, John Campana, Harry Pruzansky, I. Cohler, J. Lapari and F. Scangerrello.

The baseball game attracted much interest and resulted in the Plumbers' victory over the Salesmen with a score of 21 to 15. The lineup was as follows:

Plumbers		Salesmen	
Blair	s.s.	Toley	1b.
Koolick	c.	Kerit	3b.
Schleich	1b.	Cooper	p.
Levenson	p.	Bing	s.s.
Campai	l.f.	Watkins	c.f.
Lipari	2b.	Brint	c.
Scangerrello	c.f.	Cohler	l.f.
Vogel	3b.	Pruzansky	r.f.
Lipani	r.f.	Wendling	2b.

Air Conditioning—

(Continued from Page 51)

after cooler. Its temperature then becomes 84 deg. Fahr. The cooling water for this after cooler is taken from the main cooler and the flow is at the rate of 5 gal. per minute. From this the water is wasted to the sewer through a laundry tray.

The drum makes one revolution every 20 minutes, or three revolutions per hour. It is powered with a 1/12 hp. motor having a speed of 1,125 r.p.m., which is brought down through a gear reduction. In this way the operation of the dehumidifying unit is continuous. This is the main point of difference between this year's installation and the one made last year. Last year only two large beds were installed and automatically controlled by a damper arrangement.

The complete operation of the system involves the use of gas, electricity and water. As for the various amounts of these, 75 cu. ft. of gas is used per hour; 2.1 kilowatts of electricity per hour and 300 gal. of water per hour.

It is understood that as conditions permit the different functions of the system may be carried on separately. For instance, if the outside temperature drops quickly, the dehumidifying and cooling equipment may be cut off to supply only filtered outside air to the upstairs rooms. On the other hand, if the outside humidity is low and only cooling is required, the main cooling coils need only be operated in connection with the main blower and filter. When all of the equipment is in use, a single electric switch operates it. When it is turned on, the main blower is started; the gas valve is opened and an automatic pilot lights the gas heater for the reactivation cycle; an electrically operated motor valve starts the water flowing through the main and after coolers; and the motor which runs the two dehumidifier blowers is started. For cooling alone—without dehumidification—the main cooler is by-passed around the water supply motor valve and is operated by hand valves. The main blower also may be operated separately by another switch. No temperature or humidity controls have been installed in this job.

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

AUGUST contracts for new construction of all descriptions awarded in the 37 states east of the Rocky Mountains showed a gain of 4 per cent over July awards, according to the F. W. Dodge Corporation. The August figure of $133,988,100 compares with $128,768,700 for July and $233,106,100 for August, 1931. Gains over July were shown in building, both residential and non-residential, as well as in engineering works. The contract total for engineering works was only 12 per cent smaller than the total shown for this class of construction during August, 1931.

August contract totals reported for New England, Metropolitan New York, Upstate New York, the Pittsburgh area, the Southeast, the Chicago and the New Orleans territories were larger than those recorded in July. Of these major territorial areas the Southeast reported a gain, also, over August of last year. Though the remaining six territories failed to score advances over July, gains over August, 1931, were reported in the Middle Atlantic States and the Central Northwest.

For the first eight months of 1932 total construction awards in the 37 eastern states aggregated $929,836,500 as compared with $2,311,598,100 for the corresponding period of 1931. Of the current year's total to date $203,205,600 was for residential building; $361,085,100 was for non-residential building; and the balance was for public works and public utilities.

COST OF BUILDING DROPPED 35 PER CENT SINCE 1925

The New York Building Congress has recently completed an inquiry to determine the trend in building cost from 1925 to July, 1932. During this period the cost of construction of all types of buildings has dropped 35 per cent, according to the report. The year 1925 marked the peak of costs and 1928 the peak of volume. The factors considered in the inquiry included materials, labor, overhead and profit.

This study of building costs was based upon replies received from representative contractors specializing in various divisions of building constructions, including plumbing, heating and other trades.

In view of the practical elimination of profit and the reduction of overhead charges to a minimum as reported from all sources, a slight upward trend in building volume will undoubtedly bring about an increase in these two items. In other words there is no assurance that profits and overhead will remain at the reduced levels for any length of time, once revival of building starts, even though materials and labor may show no rise for many months thereafter.

Speaking at the meeting of the commercial section of the Wisconsin Utilities Assocaition, held in Eau Claire, Wis., August 26, R. W. Pocock, of Dayton, O., stated that a tremendous ultimate market for the sale of air conditioning apparatus in homes and offices is now apparent. "Air conditioning means indoor air may be heated or cooled," he pointed out. "It may be humidified or dried out, circulated and cleaned."

Applications for air conditioning Mr. Pocock classified in three groups: For personal comfort in office or home, for "customer appeal" in retail stores, shops or offices, and for employe efficiency in offices and factories. Sales of air conditioning apparatus will provide work for thousands, he declared.

A nation-wide program to encourage repair, maintenance and modernization work in every American community is being undertaken. The present low level of costs is regarded as the opportunity of which buyers can take advantage, provided vigorous efforts are made to interest them. A government official in pledging the support of the National Committee on Reconditioning, Remodeling and Modernizing, estimated that about $5,000,000,000 worth of repairs are needed to keep existing structures in good condition.

Huddleston—

(Continued from Page 44)

(c) The proposed contract sum is..... .....Dollars ($.....).

(d) The subdivision of the proposed contract sum is as follows:

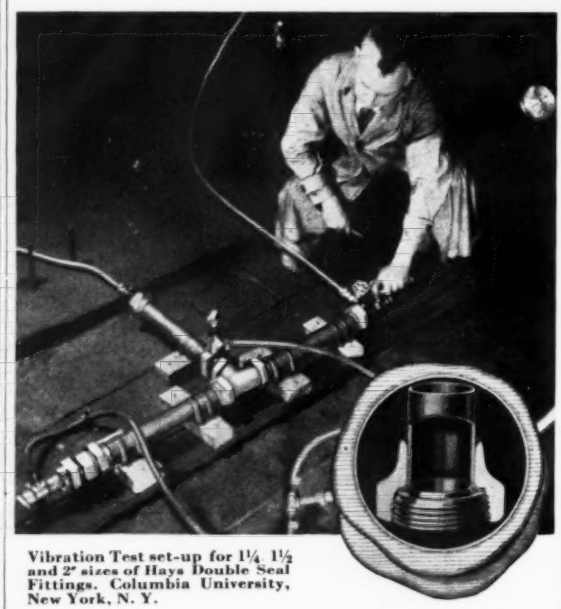
Item (1) The work of the general contractor, being all work other than that covered by the following item (2).....($.....).

Item (2) Sub-bids, as follows:

	Bidder	Amount
(1) Roofing	.....	$.....
(2) Plastering	.....	$.....
(3) Etc.		
Total of Item (2)		$.....

(e) The undersigned agrees that his selection as general contractor shall be based solely on Item 1 of the subdivision of proposed contract sum, as stated above, and that the list of sub-bids and the amounts thereof given above in Item 2 are not to be considered in making the award.

The undersigned further agrees that the above list of sub-bidders represent bona fide bids based on the plans and specifications, made in good faith to the bidder, and are hereby submitted by the general bidder as representing his best judgment in selection on the basis of quality,



Vibration Test set-up for 1¼ 1½ and 2" sizes of Hays Double Seal Fittings. Columbia University, New York, N. Y.

Only Hays Double Seal Fittings Could Survive These Tests

Pipe Wrench Test

Apply the pipe wrench test to all makes of copper fittings and demonstrate to your own satisfaction the superior strength of the Hays Double Seal fitting.

We went even further and commissioned Columbia University to subject all sizes of Hays Copper Joints to a series of maximum mechanical stresses that we honestly believe no other copper fitting could survive.

The set-up, shown above, provided constant vibration at two points by Tabor Vibrators (2,800 blows per minute at 70 lbs. air pressure). At the same time, steam at 112 lbs. pressure and water at 50 lbs. pressure were alternately introduced in five-minute periods for one and one-half hours. Near the end of this test, heavy weighted wrenches were placed on the tightening nuts in a vain effort to back them off the fitting. Then a torsion test twisted the tubing until it closed but also failed to loosen the joint. In fact, this same joint immediately withstood a hydraulic test of 2,235 lbs. per square inch.

Insist upon Hays Double Seal Copper Fittings. Your copper plumbing and service lines will go in easier and there will be no regrets. Send for complete test data and Catalog No. 3.

HAYS MFG. CO., ERIE, PA.

HAYS

DOUBLE SEAL CONNECTIONS

performance, and price for the work so bid upon, and if the undersigned is awarded the contract, they will be used for the work indicated, at the amounts stated, if satisfactory to the architect as provided in paragraph D of information for bidders.

The Undersigned agrees that if he is selected as general contractor he will promptly confer with the architect and the owner on the question of sub-bidders and that the architect may substitute for any sub-bids listed above, the names and amounts of sub-bids as submitted for this work and filed with the architect, as required by the notice to bidders, against whose standing and ability the undersigned makes no valid objection, and that he will use all such finally selected sub-bidders at the amounts so named and be in every way as responsible for them and their work as if they had been originally named in this proposal, the total contract price being adjusted to conform thereto.

Bidder .....
Address .....

PROPOSAL FORM

(Sub-bidder)

To .....
.....

(a) The undersigned proposes to furnish all the labor and materials required for the completion of all the work specified under the subheading .....
(name sub-trade)
Paragraph No. ..... to No. ..... inclusive in accordance with the plans and specifications furnished by ..... architect for .....
(name of building)
located on ..... street, ... city, ...state, for ..... owner, for the contract sum of ..... Dollars ($.....).

The undersigned further agrees to be bound to the general contractor by the terms of the general conditions, drawings and specifications, and to assume toward him all the obligations and responsibilities that he, by those documents, assumes toward the owner.

The undersigned offers the following information as evidence of his qualification to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under present business name ..... years.
2. Ever failed to complete any work awarded? .....
3. List three recent buildings with names of general contractor and architect on which you served as sub-contractor for work of similar character as required for the above named building.

	Building	Contractor	Architect	Am't your contract
(a)				
(b)				
(c)				

4. Bank Reference:

Respectfully submitted,

.....

With the Trade Golfers

Buffalo and Rochester Golfers Hold Joint Meeting

The joint meeting of the Rochester, N. Y. Plumbing and Heating Golf Association and the Western Trades Golf Association of Buffalo, N. Y., was held at LeRoy, N. Y. on Aug. 11. This meeting attracted a representative group of contractors, wholesalers, and manufacturers. Its success led to the decision to hold a similar joint meeting in September.

The scores follow:

Rochester Players—				Buffalo Players—			
Name	G.	H.	N.	Name	G.	H.	N.
Snyder	91	16	75	Voisinet	83	0	83
Short	87	15	72	Castin	101	27	74
Scott	99	22	77	Hagerty	97	30	67
Gresens	104	25	79	Brown	104	25	79
Utz	99	24	75	Clement	101	30	71
Draude	98	20	78	Seiffert	97	23	74
Herring	91	13	78	Tellaak	106	28	78
Coe	122	40	82	Rente	111	35	76
Ewen	89	7	82	Carlson	96	20	76
Caldwell	83	6	77	Rydstrom	115	30	85
Friedell	110	25	85	Johnson	93	18	75
Hall	96	23	73	Danforth	88	15	73
Beecher	109	28	81	Lyman	89	12	77
Kolstad	111	30	81	Mahoney	98	20	78
Wright	96	30	66	Farrar	101	35	66
Besant	133	30	103	Farnham	103	30	73
Perdue	111	40	71	Hannig	105	25	80
Bedard	137	45	92	Dannies	125	60	65
Mollnow	100	23	77	Converse	109	35	74
Hale	99	27	72	Lowry	98	22	76
Hunting	83	9	74	Weiss	131	40	91
Peifer	132	40	92				

Eastern Trade Golfers' August Meet

The August meet of the Eastern Trade Golf Association was held Tuesday, August 16th, at the Bonnie Briar Country Club, Larchmont, N. Y. There was a good attendance of over thirty-five members and guests who had a perfect day to play one of the outstanding courses in the New York Metropolitan District.

The September meet will be held at Canoe Brook Country Club, Summit, N. J., on September 13th.

Following are the scores and prize winners for the day:

	Morning Round			Afternoon Round		
	G.	H.	N.	G.	H.	N.
A. Engle	94	16	78	87	16	71
A. Hinrichsen	91	18	73	93	18	75
Herman Lange	126	45	81	133	45	88
Henry Sleik	86	17	69	87	17	70
H. W. Reis	107	24	83	95	24	71
Geo. Allen	98	23	75	93	23	70
S. Geohegan	94	7	87	..	..	..
W. Staples	97	18	79	..	..	..
F. A. Murray	84	13	71	87	13	74
J. T. Midyette	95	28	67	105	28	77
R. G. Bookhout	108	29	79	101	29	72
John Kjerner	84	5	79	85	5	80
S. C. Carrier	87	9	78	77	9	68
B. K. Strader	101	30	71	105	30	75
W. H. Driscoll	109	32	77	100	32	68
R. A. Wolff	90	14	76	93	14	79
A. P. Keasby	98	17	81	103	17	86
H. Townsend	94	13	81	83	13	70
B. Cummings	110	24	86	104	24	80
J. B. Garfield	80	9	71	85	9	74
Geo. M. Scott	97	21	76	93	21	72
Walter Davis	100	14	86	95	14	81
Chas. S. Wood	102	21	81	107	21	86
D. H. Rooney	97	18	79	96	18	78
D. A. McKay	89	9	80	79	9	70
W. J. Osborn	90	13	77	93	13	80
J. R. Murphy	108	36	72	98	36	62
A. R. Glore	84	15	69	90	15	75
J. C. McDonald	86	18	68	98	18	80
H. Bartlett	97	20	77	111	20	91
T. W. Powers	93	17	76	96	17	79
Walter Fleisher	98	24	74	103	24	79
H. J. Reeves	89	10	79	80	10	70

Prize Winners

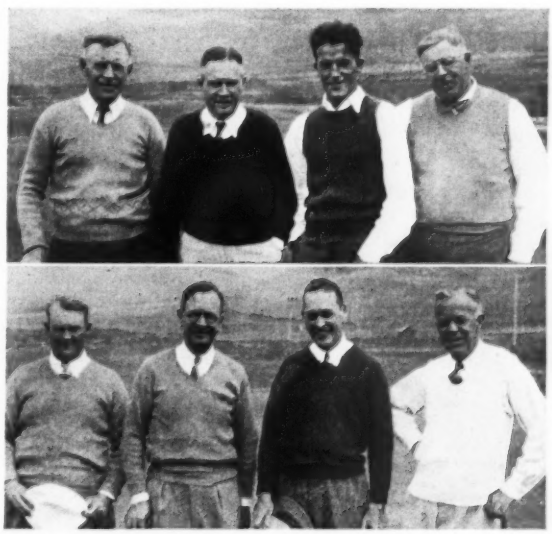
Low gross prize: S. C. Carrier.—Low net, 36 holes: Joseph R. Murphy.

18-hole handicap prize winners: 1st, S. C. Carrier.—2nd, Arthur R. Glore.—3rd, Henry Sleik.—4th, J. C. McDonald.—5th, J. T. Midyette.—6th, W. H. Driscoll.—7th, D. A. McKay.—8th, H J. Reeves.—9th, Harold Townsend.—Guest prize, Harry Hageimeister.

Western Trade Golf Association Holds August Tournament

Bob-O-Link Golf Club, in Highland Park, Ill., was a golf treat that attracted sixty-three members and guests of the Western Trade Golf Association to this organization's regular August tournament on August 24. Rated as one of the hardest courses in the Chicago district, it was, nevertheless, licked by a good percentage of the members with scores respectably low.

It was the particular favorite of W. A. Taylor, who won the association cup with a sub-par score and also first prize in classes A and B. Right behind him in this top class was J. H. Milliken, vice president of the association. In class C two members went under par to win first and second respectively—Leonard Krez and Charles



At the top, from left to right: J. J. McLeod, Frank M. Gabbert, Thomas Mixter and Frank J. Mosher.—At the bottom, left to right: Donald O'Hair, B. F. Blair, F. F. Elliott and Ross M. Clark.—From photos taken at a recent tournament of the Plumbing and Heating Club of San Francisco and the Bay Cities

Thumm. Class D honors went to G. G. Turner and L. O. Williams.

Roy M. Getschow, handicapper of the association, won the blind bogey award and L. P. Dwyer garnered the special prize for low score on three selected holes. The guest prize went to Thomas Frainey on a nice gross 80.

The association's season matches are getting down to a narrow field. Survivor of the fourth round in the championship matches at Bob-O-Link were W. H. Lotts, M. G. Henderson, president of the association, W. P. McFarland, G. G. Turner and F. H. Paschen. Those who go into the fourth round of the consolation matches next month are Clayton Paschen, Charles Thumm and D. M. Cooper, Jr.

The next tournament of the association will be held at Olympia Fields Country Club.

Player	G.	H.	N.
H. W. Mollison	104	20	84
M. G. Harbula	98	23	75
E. W. Rietz	102	24	78
W. M. Brayton	108	19	89
C. H. Beyer (G.)	113	..	..
J. W. Radford (G.)	87	..	..
E. S. Thompson (Guest)	89	..	..
D. M. Cooper	108	24	84
T. E. Beasley	103	14	89
L. Narowetz (G.)	119	..	..
L. P. Dwyer	93	14	79
W. H. L. Smythe (Guest)	87	..	..
H. O. Jackson (G.)	104	20	84
Chas. Thumm	92	21	71
C. Peterson	116	27	89
Carl Johnson	118	25	93
E. P. Heckel (G.)	98	21	77
W. H. Lotts	95	13	82
V. A. Jevon (G.)	92	18	74
Geo. Dickerson	99	18	81
W. A. Taylor	88	17	71
E. C. Welch	96	13	83
H. T. Matthews (Guest)	95	..	..
J. Henderson (G.)	96	..	..
R. Doherty	96	11	85
L. O. Williams	111	30	81
C. E. Crone	103	23	80
L. Krez	90	20	70
R. M. Getschow	103	22	81
L. L. Shaller (G.)	98	8	90
L. T. Braun	106	17	89
E. T. Murphy (G.)	107	..	..

Player	G.	H.	N.
L. M. Fisher (G.)	107	..	..
D. Wise (G.)	103	..	..
J. L. Comer	92	13	79
A. J. Saville (G.)	93	..	..
J. A. Corboy	106	20	86
M. E. Allen	107	23	84
C. Paschen	93	15	78
W. P. McFarland	109	28	81
M. G. Henderson	94	17	77
P. C. Peterson (Guest)	107	..	..
N. Douglass (G.)	91	..	..
R. C. Fries	123	30	93
J. W. Stanfiel	100	17	83
A. J. Lindquist (Guest)	112	..	..
H. G. Kriessl	Picked up		
J. P. Kiely	89	5	84
Rev. J. Kiely (G.)	93	..	..
J. Bates (G.)	93	..	..
V. D. McConnell (Guest)	93	..	..
R. Quayle (G.)	87	..	..
L. W. Washington	112	30	82
T. Frainey (G.)	80	..	..
G. G. Turner	107	27	80
A. Purnell	90	12	78
C. C. Reilly (G.)	85	..	..
J. H. Milliken	83	10	73
D. Comstock (G.)	80	..	..
C. E. Price	107	18	89
M. Davies	107	18	89
E. Ross (G.)	104	..	..
John Krez	No score		

Connecticut Plumbing and Heating Golfers Hold Successful Tournament

The July meeting of the Connecticut Plumbing and Heating Trades Golf Association which was held at the Mill River Country Club, Stratford, Conn., was well attended and a pleasant success. The winners were as follows:

Handicap 0-20

Low Gross—Frank Daly 77
2nd Low Gross—M. K. Blakwell 89
Low Net—H. D. Williams 90-18-72
2nd Low Net—F. E. Doyle 92-16-76

Handicap 21-30

Low Gross—Fred Klett 88
2nd Low Gross—Al. Russell 92
Low Net—E. O. Nelson 94-27-67
2nd Low Net—J. J. Cotter 95-24-71

Handicap 31-40

Low Gross—J. McCarthy 102
2nd Low Gross—Ben Erk 104
Low Net—J. F. Rowe 110-40-70
2nd Low Net—H. E. Coe 112-40-72

Guest

Low Net—Dave Malloy 89

N. E. Heating Trades Golfers Hold Meet at South Shore Country Club

The New England Heating Trades Golf Association recently held a successful tournament at the South Shore Country Club at Hingham, Mass. The prize winners at this event were as follows: 1st low net, John McAulliffe (guest); 1st low net, J. J. Riley; 2nd, L. J. Gelshenon and E. T. Tierney tied; 3rd, E. T. Keefe; 4th, J. G. Ross and E. T. Dunn, tied; 5th, J. F. Tuttle, and Robert Robertson, Jr., tied; 6th, Max Monks, and 7th, Frank Johnson.

The scores follow:

	G.	H.	N.
J. J. Milliken	101	17	84
F. Johnson	96	16	80
J. F. Tuttle	89	12	77
J. G. Ross	88	13	75
F. T. Scott	99	16	83
M. R. Grover	111	22	89
K. F. Bowkett	121	32	89
H. W. Coombs	109	28	81
R. Robertson, Jr.	103	26	77
L. J. Gelshenon	99	26	73
J. Riley	109	37	72
J. C. Farrington	88	7	81
Geo. Elliott	105	19	86
G. Priggen	125	21	104
B. C. Dwyer	..	..	..
E. F. Tierney	104	31	73
A. C. Bartlett	98	14	84
A. A. Klonower	95	14	81
E. F. Dunn	87	12	75
F. Gilmore	..	..	..
C. F. Flint	91	10	81
T. O'Callahan	103	19	84

	G.	H.	N.
W. H. Oleson	103	16	87
M. H. Monks	108	30	78
E. T. Keefe	92	8	84
W. S. Earle	96	15	81
J. F. Dwyer	..	..	..
H. H. Lynch	96	15	81
Guests			
J. Squires	93	16	77
C. F. Burgger	112	28	84
R. R. Mickle	96	16	80
E. H. Andrews	80	6	74
John Kelly	136	32	104
J. McAulliffe	110	40	70
W. T. Hahl	88	15	73
J. F. Cabeen	118	26	92
R. Robertson	99	18	81
S. F. Bill	103	30	73
A. E. Ferris	111	19	92
H. McMannus	107	24	83
J. A. Travers	78	7	71
E. A. Erickson	102	20	82

Milwaukee Golfers Meet at North Hills Country Club

Milwaukee Plumbing and Heating Club held a golf tournament at the North Hills Country Club, near Milwaukee, on August 25, at which time G. W. Noble and Gene Mueller won the low gross scores, with an 82 and 83, respectively. Jerry Ryan, with a 137, was presented with the Duffer's cup for the second time during the season. L. R. Schmaus, president of the club, and Norman Dengel, chairman of the golf committee, made arrangements for the event.

Chicago Plumbing Contractors Play Golf at Westmoor Country Club

The Plumbing Contractors' Association of Chicago held its fourth golf tournament this season on Thursday, August 18, at the Westmoor Country Club, with a good attendance. The winners and their prizes in the various classes were as follows:

Members' Prizes—Class A—From 0-22

1st prize, low net, golf bag, Karl Nilson.
2nd prize, low net, rain coat, John MacKenzie.
3rd prize, low net, golf hose, Peter M. Munn.

Members' Prizes—Class B—From 23-40

1st prize, low net, slicker, R. Lindblad.
2nd prize, low net, raincoat, John MacKenzie.
2nd prize, low net, raincoat, John Blair.
3rd prize, low net, three golf balls, Henry Swade.
4th prize, low net, golf hose, James Fettes.

Associate Members' Prizes—Class A—From 0-23

1st prize, low net, suede jacket, Jos. Comer.
2nd prize, low net, sweater, Ed Payne.
3rd prize, low net, golf hose, Art Jolliffe.

Associate Members' Prizes—Class B—From 23-40

1st prize, low net, chipper and putter, Frank Fabri.
2nd prize, low net, sweater, Wm. Brookman.
3rd prize, low net, golf hose, M. I. Weil.
Guest prize, three golf balls, I. L. Wise.
Flight prizes, one dozen golf balls, P. J. Weber, Ed. Hoelscher, E. S. Benet, Chas. Jones, G. A. Nilson, and James Bonga.

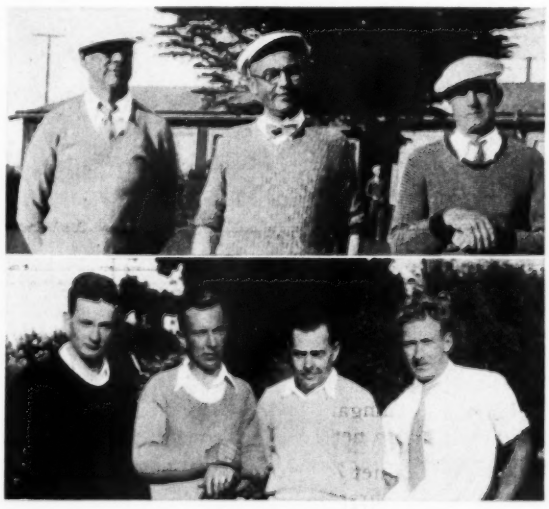
The individual scores follow:

	G.	H.	N.		G.	H.	N.
John Blair	106	29	77	Geo. Matthews	128	40	88
J. J. Bonga	106	23	83	Milton Miller	104	16	88
W. R. Brookman	114	32	82	Peter M. Munn	104	23	81
E. Bunt	128	32	96	G. A. Nilson	103	21	82
Joe Comer	82	8	74	Karl Nilson	87	12	75
Frank Fabri	97	25	72	E. W. Payne	92	18	74
Jas. Fettes	109	24	85	Clyde Savage	110	20	90
Ed. Hoelscher	113	26	87	J. W. Stanfeil	102	15	87
Art Jolliffe	98	18	80	Henry Swade	108	29	79
Chas. W. Jones	100	16	84	R. J. Weber	111	24	87
Wm. F. Knauss	118	25	93	M. I. Weil	122	40	82
C. R. Lindblad	101	26	75	Tod Wilkins	99	15	84
J. S. MacKenzie	94	17	77	I. L. Wise	91	13	78

San Francisco Trade Golfers Play Night Golf

A brand new idea conceived by the golf committee of the Plumbing and Heating Club of San Francisco and the Bay Cities drew more than an average attendance at the regular monthly tournament, held at the Ingleside course on August 18. The drawing card was night golf. The Ingleside course is the first full-sized course in the country that is lighted for night play, nine holes being flooded with 50,000,000 candlepower, or enough light to make it easier to follow the flight of the ball than during daylight hours.

The regular tournament play went on directly after lunch, when Past President J. V. Young qualified for initial honors in Class A by shooting an 80-14-66, while R. Fuite's 90-23-67 card earned him the trophy in Class B. Ralph Olsen was awarded the iron trophy for his high gross of 105. This being the first tournament at which all three men were present, since the February play, the three-way tie between David Turner, Chas. Higgins and Frank Mosher was decided in favor of Mr. Turner who shot a net 66. Fol-



Top row, left to right: Charles Higgins, E. J. Kraus and J. V. Young.—Bottom row: E. J. Ahern, H. Brace, W. M. McKay and B. Brace.—From photos taken at the Ingleside Golf Course, San Francisco, August 18

More Business Right Now for Engineers and Contractors...

SARCO HEATING SYSTEMS
BUILT TO A QUALITY STANDARD

While you are wondering where to look for more business, there are plenty of orders all around waiting for you, if you tell owners of obsolete buildings how to make them easier to rent or sell by bringing them up to date.

Do a little "prospecting" in old buildings. You'll find them a gold mine for more business.

Out-of-date heating systems show up the age of a building more glaringly than almost any other item.

Sarco Heating System not only makes buildings more livable in cold weather, but it cuts out steam waste and helps to secure an operating profit in spite of reduced rents. It increases rentability and property values out of all proportion to its original cost.

Even the inexpensive change of substituting Sarco Radiator Traps for old traps is sufficient, in most buildings, to give additional heat and reduce coal bills sufficiently to quickly pay for the Sarco Traps.

Without any obligation, let us assist you in working out this problem.

Write for our Catalog M-45.

Protect Your Pipe with SARCO PIPE SAVERS

In Heating too... let your architect or consulting engineer advise you.

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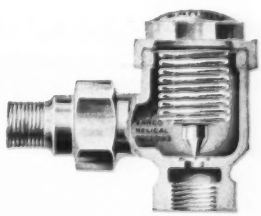


Remodel with SARCO

PERFEX

WANTED

more CRITICAL inspection!

The loose-spending theory that all high-priced products are good, and that all low-priced products are inferior, died sometime in 1931. Rest in peace.

Today engineers and contractors are inspecting, appraising, and testing; and they have found quite a difference in products of the same class, once they are stripped of all hocus-pocus by the good old fashioned process of getting down to brass tacks.

A number of products have gained ground as a result of this process—and one of them is the Perfex Uniheat! The use of copper from inlet to outlet took on new lustre under critical appraisal. The finer welding looked good to engineers who had suddenly found time to inspect it.

Many hitherto unnoticed refinements, like the suspension of the core within the unit, told the story of real manufacturing ideals to people who suddenly found themselves in an examining mood. In the light of these superlative features, the price of the Perfex Uniheat seemed unbelievably low.

That is why Perfex sales mounted in 1931. This is also why they are still further ahead in 1932. See this unit if you possibly can. At least write for information!

PERFEX CORPORATION

(*Heating Division*) Milwaukee, Wis.

"Heat Radiation Specialists for Over Twenty Years"

Also manufacturers of: Concealed convection heaters of advanced design and construction. Process cores for all types of pre-heating and process work.

UNIHEAT

lowing a delicious steak dinner at the clubhouse, also attended by a number of additional members who drove down for the occasion, the four members who shot the lowest net scores in the afternoon play, regardless of class, made up the "owl foursome" that played under the floodlights for three special prizes. They were J. V. Young, J. McLeod, R. Fuite and D. Turner. Turner and Fuite tied for first honors, each shooting 36½, Fuite winning the toss; and Young nosed out McLeod by a bare half stroke, with a 41 card. Half strokes were accounted for by having to split their regular handicaps, as they played only nine holes. Three special trophies were offered for the night play by P. E. O'Hair & Co., M. Greenberg's Sons and the Plumbing and Heating Club.

The individual scores follow:

	G.	H.	N.		G.	H.	N.
Carrigan	86	12	74	Greer	100	G	100
Olsen	105	35	70	Fuite	90	23	67
McLeod	84	17	67	Gabbert	94	18	76
Hoopes	101	27	74	Mosher	96	22	74
Greenberg, M.	97	22	75	Greenberg, S.	103	27	76
Doerr	95	25	70	Rowe	96	16	80
McKay	133	G	133	Ahern	117	G	117
Brace, H.	100	G	100	Brace, B.	106	G	106
Young	80	14	66	Gudelj	94	G	94
Altchison	106	G	106	Hartman	110	G	110
Wilson	90	16	74	Higgins	96	22	74
Kraus	96	24	72	Gayner	84	G	84
Turner, G.	92	G	92	Turner, D.	89	21	68
Brown	95	G	95				

The August Tournament of Connecticut Trade Golfers

The August meeting of the Connecticut Plumbing and Heating Trade Golf Association was held at Hubbard Heights, Stamford, Conn., on August 18. The results of the day's events were as follows:

Handicap 0 to 20

Low gross, electric clock, F. Daly, 86.
Low net, fish pole, F. Doyle, 87-16-71.
2nd low net, camp stove, L. E. Gretter, 91-18-73.

Handicap 21 to 30

Low gross, golf bag, C. V. Pauley, 91-27-64.
Low net, fish pole, R. D. Scoville, 93-28-65.
2nd low net, quoit set, R. E. Douglas, 99-29-70.

Handicap 31 to 40

Low gross, heating pad, B. W. Erk, 110-32-78.
Low net, fish pole, H. Wilson, 125-40-85.

Guest Prize

Low gross, Jersey sweater, Wm. Windus, 77.

New Jersey Golfers Meet at Essex Fells Country Club

The Plumbing and Heating Trades Golf Association of New Jersey held its August meet at Essex Fells Country Club, West Orange, N. J. The day was made to order and thirteen members turned out as guests of B. Remer of Crane Co. Nine holes were played in the morning, kickers handicap, first prize went to F. Engelberger, and second prize went to C. Pierce.

Eighteen holes were played in the afternoon with H. Baumgartner winning his second leg on the cup, with a net 71. The following won prizes: Class A, first prize, H. Baumgartner, net 71; second prize went to H. Rumler with net 74; third prize went to F. Engelberger, with a net 76; fourth prize went to F. Robinson. Class B, first prize went to A. Blackwood,

net 73; second prize went to C. Pierce, net 75; third prize, as A. Cashman and A. Gasewind were tied they tossed for the prize and Gasewind won; fourth prize went to H. Officer, net 83.

The afternoon scores follow:

	G.	H.	N.		G.	H.	N.
S. Blackwood	105	32	73	W. H. Lee	120	36	84
H. Officer	119	36	83	W. S. Rumler	96	22	74
F. C. Stille	89	8	81	A. R. Gasewind	106	29	77
J. M. Buday	137	40	97	F. J. Engelberger	96	20	76
F. L. Robinson	101	20	81	H. E. Baumgartner	91	20	71
A. B. Cashman	103	26	77	M. E. Durkee	130	39	91
C. Pierce	115	40	75				

Southern California Federation Holds Golf Tournament and Picnic

Playing host to members of the Southern California Federation of Merchant Plumbers, the Pasadena Merchant Plumbers Association combined a golf tournament, a baseball game and a picnic supper Saturday, August 20, for one of the most successful gatherings in the history of the organization.

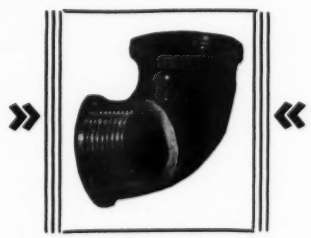
Approximately 200 persons, from all points in the southern section of the state, took part in some or all of the activities during the day—at Brookside Park, Pasadena—150 attended dinner, 100 cheered or participated in the ball game and 28 teed-off for golf.

The golf tournament was staged in the morning on the Pasadena municipal course, adjoining Brookside Park, under the direction of George Richardson, of Pasadena. Nine merchant plumbers and 19 manufacturers or jobbers played. Mr. Richardson gave the duffers a chance at the prizes by inaugurating awards not usual in tournament play, those for the highest net score and for the average score registered. In the plumbing group H. R. Fielden won a bean pot for a low net score of 70, F. C. Schilling three golf balls for second low net of 73, R. Lohman a bean pot for low gross of 75, E. Lee three golf balls for second low gross of 83, and Bert Sutton won a dozen golf balls in the blind bogey with a net of 76. Among the supply men W. Hoyt and J. B. Seem tied for the low gross prizes of a bean pot and three golf balls with scores of 85, E. Duke won a bean pot for low net of 64, E. Bruce three golf balls for second low net of 66, B. DeLong a dozen golf balls in the blind bogey with a net of 72, H. Goss won a vase with the average net score of 76, and H. Marsh won a vase for the highest gross score registered, 113. The list of cards turned in included:

Merchant Plumbers: F. C. Schilling, 97-24—73; Bert Sutton, 100-24—76; R. Lohman, 75-8—67; E. Lee, 83-8—75; H. R. Fielden, 81-11—70; J. Hogan, 105-24—81; E. O. Nay, 106-30—76; G. Richardson, 111-25—86; Benedict, 91-15—76.

Supply Men: B. Graham, 97-23—74; J. Aimer, 106-24—82; B. DeLong, 87-15—72; P. Atchison, 90-20—70; E. Bruce, 87-21—66; R. W. Baugh, 102-27—75; W. S. Crandell, 102-22—80; H. Marsh, 113-20—93; O. Mauser, 88-20—68; C. T. Lloyd, 95-18—77; R. E. Penney, 90-16—74; F. Swoboda, 95-22—73; W. Hoyt, 85-10—75; W. Carter, 99-30—69; J. B. Seem, 85-10—

PIPE FITTINGS



Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

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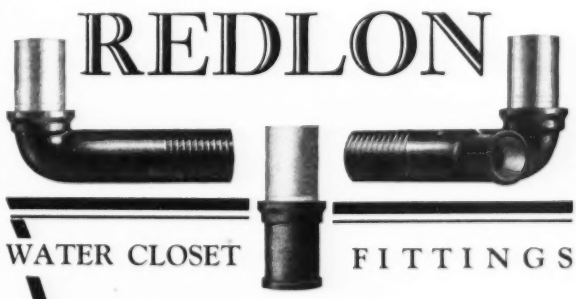
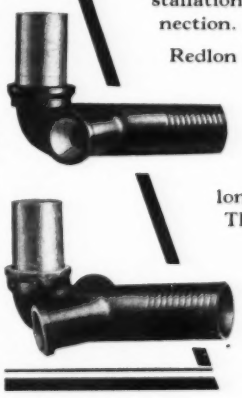
Chicago, Ill.
MANUFACTURERS OF BRASS AND IRON VALVES

REDLON



WATER CLOSET FITTINGS

Now you can have the advantages of a lead connection without the great trouble usually accompanying the installation of a lead closet connection.



Redlon Water Closet Fittings are easy to install, safe and made either for standard or extra heavy soil pipe. The lead top is six inches long (ample), and PART OF THE FITTING.

Write for details.

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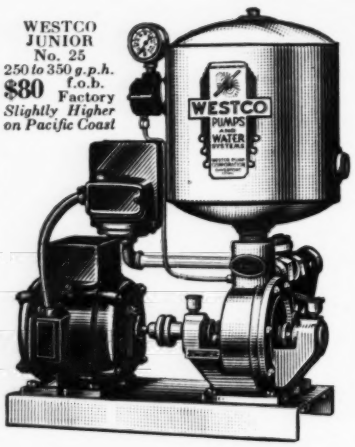


DEALERS: ***No short discounts on Westco Junior Water Systems. Your full profit protected.***

Westco JUNIOR

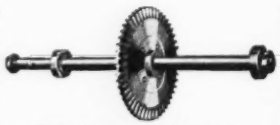
is selling "big" this year

1932 sales jump 200%—remarkable money making opportunity exists for dealers

THIS improved Westco Turbine-type Water System has made it possible for aggressive dealers to maintain and, in many cases, increase their profitable water system business — all this in spite of 1932 selling conditions.

Every selling feature previously found only on the larger, more expensive Westcos, is now found on the Westco Juniors. Listen to this:

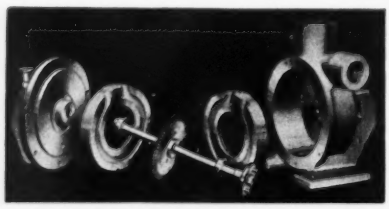
Westco Juniors are made in two models. The only difference being in the capacities. Model No. 25 has a full 250 to 350 g.p.h. capacity. Model No. 32 has a larger capacity ranging from 325 to 450 g.p.h. All Westcos have *Automatic Air Volume Control;* are *Self-priming* and *quiet in operation. Only one moving part*—the Impeller. *No metal-to-metal contact* inside the pump, no gears, no belts, no valves, no springs, no leathers, no pistons, no rods. In fact, nothing to get out of order.



Westco's *only* moving part—its multi-vaned impeller

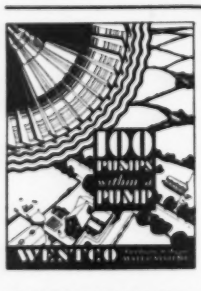
Westco's patented *Removable Liners* allow the capacity to be increased or decreased without disturbing the installation. This advanced feature has another valuable advantage. Because, if foreign matter should accidentally enter through the suction line and cause wear, the pump can easily be made as good as new. Simply replace the *Removable Liners.* This job costs but little and can be quickly done on the premises. These modern water systems require lubrication only once a year. They are absolutely free from the usual water hammer and pounding in the pipes. Good for *28 ft. suction lift.* Attractively finished in apple green and black enamel.

Westcos are built in a complete range of sizes with capacities from 250 to 3000 gallons per hour. It's easy to be the leading water system dealer in your locality when you handle the Westco line with its *Money-back Guarantee.* Remember, Westco franchises are exclusive franchises. So act quick! Sign the coupon below and *mail it today* for FREE, colorful Catalog and new low Price List which are just off the press.



Disassembled view showing Westco's Impeller, Patented Removable Liners and Casings.

Westco Pump Corporation, Davenport, Iowa. *Branches:* New York, Philadelphia, Chicago and San Francisco. *Jobbers in 50 Principal Cities.*



COUPON *BRINGS* CATALOG

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Gentlemen: Without obligation please send me FREE Westco Water System Catalog and Price List.

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WESTCO *TURBINE* PUMPS

75; E. Duke, 84-20—64; D. D. Updegraff, 89-18—71; H. Goss, 91-15—76; H. R. Johnson, 86-10—76.

The baseball game staged in the afternoon, resulted in a victory for the team composed of Los Angeles merchant plumbers over one representing Pasadena in seven innings by a 9 to 6 score. Lineups were:

Los Angeles: Fox, c; Reeves, p; Larvette, 1b; Brown, 2b; Van, ss; Baugh, 3b; Lyon, cf; Nies, lf; Watson, rf.

Pasadena: Robinson, c; Mack, p; Hess, 1b; Tyler, 2b; Erickson, ss; Helms, 3b; Wilmot, cf; Meskell, lf; Morris, rf.

Picnic supper was eaten at 6 o'clock, during which the Federation served watermelon and coffee. Watermelons which were left were sold at auction to those present to help defray expenses.

The gathering was the last of the year to be presided over by Howard Swihart, for the Federation. Fred Reed, of Los Angeles, will assume the presidency in the months of September and October. At the October meeting new officers will be named for the comnig fiscal year.

Michigan Trade Golfers Meet at Red Run Golf Club

The members of the Michigan Trade Golf Association were guests of Edward Glanz at Red Run Golf Club, Detroit, Mich., at their monthly tournament on Thursday, August 25. The day was ideal for golf and thirty-four members and guests attended.

After dinner the regular business meeting was held. The membership committee presented seven new members whose applications were accepted. After awarding of prizes the meeting was adjourned.

The September meet will be held at Meadowbrook Golf and Country Club, on Wednesday, September 21.

Scores and prizes were as follows:

Low Net Prizes

	G.	H.	N.		G.	H.	N.
1. Larry Walsh..	95	26	69	3. E. Sanger	102	30	72
2. H. O. Nelson..	99	28	71	4. M. B. Allan....	92	20	72

Kicker Prizes

	G.	H.	N.		G.	H.	N.
H. B. Miller.....	115	30	85	Ira Kanack	104	25	79
Edw. Glanz	100	24	76	C. Soderberg	91	10	81
J. E. McFate.....	107	26	81				

Other Scores

	G.	H.	N.		G.	H.	N.
R. W. Light.....	108	26	82	Tom Brown	86	11	75
O. E. Fisher.....	96	20	76	Karl Zint	101	18	83
C. W. Gudnaw...	99	17	82	C. Mosack (G'st).	126	..	..
S. Kelly (Guest).	91	..	..	J. F. McIntire....	110	20	90
J. Pendergast ...	91	10	81	H. N. Booth (G.).	95	..	..
E. J. Anderson...	91	5	86	H. E. Paetz.....	94	15	79
Wm. F. Arnoldy.	91	16	75	H. S. Ellington			
F. Marzolf	118	26	92	(Guest)	112	..	..
R. L. Deppmann.	106	24	82	C. T. Morse.....	95	12	83
Jim Brooks (G'st)	97	..	..	M. Schaefer (G.).	132	..	..
E. C. Robinson				Earl Sheley	93	16	77
(Guest).....	103	..	..	H. R. Frater (G.).	103	..	..
A. W. Fikentscher.....	111	26	85	J. F. G. Miller...	93	16	77
				T. Chester (G'st).	104	..	..

Death of Aden E. Smith

Aden E. Smith, secretary and sales manager of the D. A. Ebinger Sanitary Mfg. Co., Columbus, Ohio, died August 7. Mr. Smith was well known in the plumbing field. He had made specialized studies of the problems met in piping cold water particularly for factory use, some of his research being covered in articles prepared for publication in DOMESTIC ENGINEERING.

TRADE

NEWS OF PLUMBING AND HEATING CONTRACTORS

Strong Rebuke for Maligning the Plumbing Industry in Word and Caricature

The following letter, signed by J. T. Donovan, executive secretary of the National Association of Master Plumbers, is self-explanatory, and we reproduce it herewith only for the benefit of those of our readers, who may meet with a similar treatment at the hands of thoughtless newspaper editors.

This letter gives good and logical reasons and arguments ready for presentation to any editor who may be found maligning the plumbing industry, and it will, no doubt, be an eye-opener to such a one and make him see his serious mistake:

National Association of Master Plumbers
733 Shoreham Building
Washington, D. C.

July 26, 1932.

The New York American, Editorial Department
220 South Street, New York City.

Gentlemen:

In an editorial which appeared in the New York American on Tuesday, May 24, 1932, under the heading "Who's An Engineer," the following statement was made: "Plumbers, rat catchers and tray checkers—by calling themselves 'Plumbing Engineers,' 'Rodent Engineers' and 'Food Engineers' have magnified their callings almost to the rank of a learned profession."

This article was referred by the New Jersey State Association to the annual convention of the National Association of Master Plumbers held in New York City, June 21st to 23rd, and a resolution was unanimously adopted condemning the publication of cartoons and jokes of this character and resenting these so-called witticisms which we consider an insult to the plumbing industry. The article states that engineering requires "an intensive knowledge of science, materials, machinery and the law of mechanics." It is very well-known that plumbing has been specialized to such an extent that today it is a highly technical trade governed by laws and ordinances of the strictest character, in order to safeguard the health of the public by insuring the proper kind of installations in all classes of buildings. Furthermore, before becoming a licensed plumber, a man is subjected to a very strict examination and must be familiar with the laws of health and sanitation in order to obtain a license to conduct a plumbing business.

This association was organized in 1883 and one of the principal objects of its organization was for the advancement of sanitation and the encouragement of sanitary laws and the enforcement thereof.

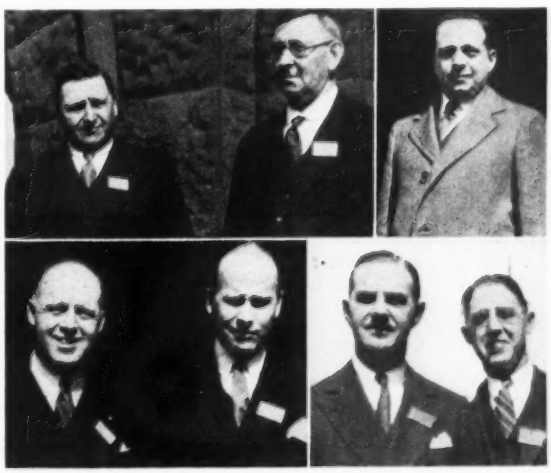
We are very much surprised that any reputable newspaper should allow a statement of this kind to appear in its columns, and the person who was responsible for this article has in our opinion a very perverted sense of humor if he imagined it to be funny.

Today we have a membership of over 10,000 and we believe that an apology is due from your publication, not only to the members of this association, but to all master plumbers, as well as to those who are in any way engaged in the plumbing industry.

Very truly yours,
J. F. Donovan,
Executive Secretary.

Tri-City Plumbing and Heating Trade Development League Elects Officers

At a recent meeting of the board of directors of the Tri-City Plumbing and Heating Trade Development League, the following officers for the league were elected for the ensuing year: President, Anthony Spoodis, Moline, Ill.; 1st vice president, Christ Schmid, Rock Island,

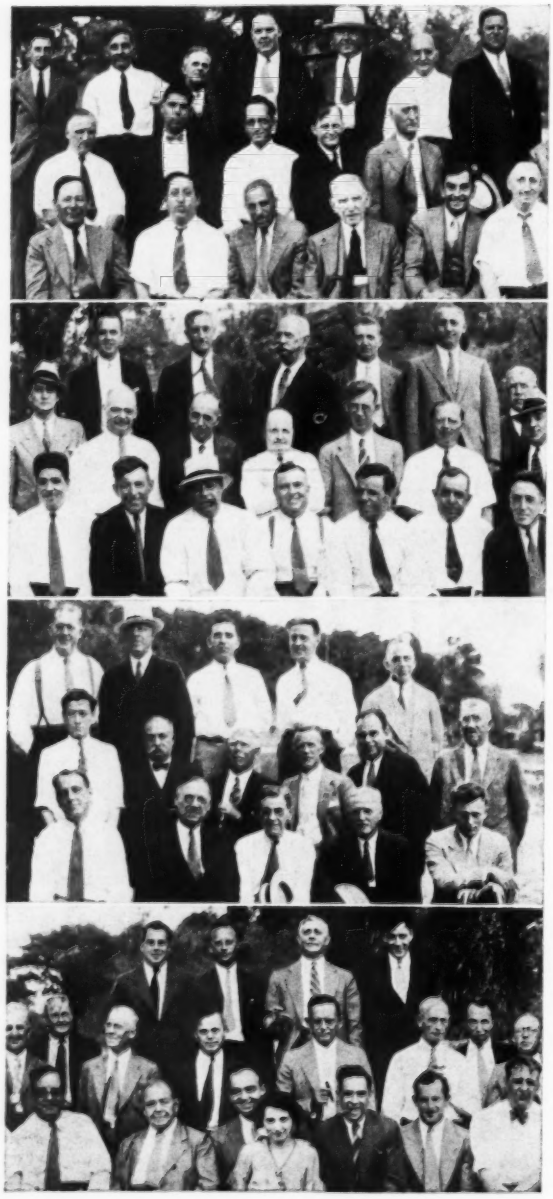


Top row, left to right: David Damstra and Dick Stekete, both of Holland, and F. M. Thompson, sales manager, Dole Valve Co., Chicago. Bottom row: J. B. Stewart, Republic Brass Co., Detroit; Carter Sales, Murray W. Sales & Co., Detroit; R. E. Larson, sales manager, and O. G. Jentsch, sales engineer, both of Wolverine Brass Works, Grand Rapids. Photos taken at the annual convention of the Michigan State Association of Plumbing and Heating Dealers, held recently at Mount Clemens, Mich.

Ill.; 2nd vice president, W. H. Collins, Rock Island, Ill., and treasurer, Kirk A. Journy, Rock Island, Ill. Kirk A. Journy, executive secretary of the Rock Island Master Plumbers Association, was reappointed to serve as secretary of the league.

Manhattan Master Plumbers' Annual Outing

Despite rain in the afternoon Manhattan master plumbers enjoyed a very successful outing and completed all games, with an attendance of about 200, including master plumbers, jobbers and manufacturers. Chartered buses left the club house at 136 E. 30th street, New York City, at 9:30 a.m., August 18, and reached Karatsonyi's Glenwood Landing, Long Island, at noon.



Four groups of picnickers at Manhattan Master Plumbers' outing

Upon arriving a breakfast was served followed by the baseball game between the Plumbers and Salesmen.

The Plumbers defeated the Salesmen in an exciting ball game by the score of 15 to 12. John Sharp, the Plumbers' centerfielder, hit a home run with the bases loaded. The line-up was as follows:

Plumbers		Salesmen	
G. Arnone	1b.	J. Kelly	r.f.
L. Kragel	c.f.	T. Foley	s.s.
H. Halloran	2b.	J. Tall	3b.
N. Rosen	3b.	G. Foster	1b.
L. Kast	r.f.	T. Caswell	2b.
J. Sharp	c.f.	J. Cohen	c.f.
J. Meredith	s.s.	C. Miles	l.f.
J. McLaughlin	p.	B. Warshauer	c.
A. Dignan	c.	W. Childs	p.

The athletic events were run off under the supervision of Henry Berg, chairman of the outing committee, and P. R. Mork, manager of the New York branch of Crane Co.

Representatives from other associations attending the outing were as follows: John Rogers, zone delegate, Queens Association; George Arnone, president of Bronx Association; Fred Schmalstich, financial secretary and executive manager of the Bronx Association; Matt J. Kennedy, president of the Greater New York Association, and L. Bosch, president of the Brooklyn Association. Commissioner Wm. J. Flynn, member of the Bronx Master Plumbers Association, was also a guest at the outing.

Henry Berg and Emanuel Kalisch served as outing committee, and they were assisted by Miss Marion Taylor and Miss Mildred Herman. They were highly complimented by all members for the excellent manner in which they handled the outing.

Names Directors of National Plumbers Association

E. B. Kleine, president of the National Association of Master Plumbers, has just announced his appointment of that association's board of directors for the coming year.

The members of the new board are:

P. W. Donoghue (Retiring President), Boston, Mass.

John J. Calnan, Chicago, Ill.

Wilbur R. Dosher, Wilmington, N. C.

George H. Drake, Buffalo, N. Y.

Joseph W. Pate, Birmingham, Ala.

George F. Reeke, Green Bay, Wis.

Harry L. Stevens, Hutchinson, Kans.

Charles M. Swinnerton, Los Angeles, Cal.

Richard G. Thomas, San Antonio, Tex.

Roy E. Thompson, Tacoma, Wash.

George H. Werner, Orange, N. J.

The president himself, Vice President Robert J. Barrett of Washington, D. C., Secretary Edward Frank of Cincinnati, Ohio, and Treasurer H. O. Green of Tulsa, Okla., are also members of the board of directors.

Associates Honor National President Kleine

E. B. Kleine, president of the National Association of Master Plumbers was honored by his many friends in the Cincinnati and Ohio associations when a stag outing was given for him on Saturday afternoon and evening, August 20.

At the dinner, which followed the afternoon outing, R. J. Cluxton, chairman of the entertainment committee, appointed John Doherty, president of the Cincinnati association, as toastmaster. The speakers included K. Murdock, representing the wholesalers, Al Miedel, representing the Zanesville association, C. Y. Critchfield, of Mansfield, Mr. Gesling of Lancaster, and Past National President Jere Sheehan of St. Louis. Past National President J. J. Vogelpohl of Cincinnati presented Mr. Kleine with a handsome wrist watch. The meeting ended with a talk from the newly appointed national secretary, Edward Frank of Cincinnati.

Those in charge of the outing were R. J. Cluxton, chairman; H. Beidenbach, William Botley, R. Carroll, Jr., Fred Smith and J. Riestenberg. The afternoon was spent in quoit pitching, cards, swimming and base ball. After enjoying the afternoon at the Mill-Brook Farm, home of J. J. Vogelpohl, the party left for the Homestead Golf Club where all enjoyed a chicken dinner.

A. G. A. Representative Outlines Ad Campaign Before Oakland Dealers

A special meeting of the East Bay Unit of the Gas Appliance Society of California was called in Oakland August 29, when members listened to an informative talk by P. O. Deitsch, special representative of the American Gas Association, who outlined in detail the plans for countrywide advertising of gas appliances. The speaker explained in detail the various advertising plans, including the purchase of space in women's magazines of general circulation, radio broadcasts, and the like, all of which will be tied in with dealer efforts. The cost of the undertaking will total $6,000,000, the expenditure of which will be spread over three years. Eighty per cent of the gas range manufacturers had been signed up to this plan at the time Mr. Deitsch spoke in Oakland.

Public Utilities Fight Master Plumbers in Kansas

Carl McGregor, Winfield, Kansas

To the Editor:

We, in Kansas, think that utility merchandising is illegal; and that it has been illegal since a monopoly was threatened. We believe that the public utility company should be engaged only in public business for which it was organized. The Kansas State Utility Anti-Merchandising Law, which was passed in 1931, was an outgrowth of this opinion.

Other cases in which a company, established for the purpose of serving the public, has overstepped the bounds designated for it have proved that definite action would be taken when monopoly was threatened.

The railroad companies very early acted on the urge for coal mines—they said that it was entirely necessary for the railroads to have coal to run their engines; therefore, they bought coal mines and went into the coal mining business. Other people engaged in the coal mining business protested this as the railroads soon had a monopoly of the coal business. By an act, the Federal Government prohibited the railroads from engaging in the coal business and from other business having to do with similar needs except the transporting of those things used directly by the railroad—steel rails, etc. This was upheld by the Supreme Court.

Then the railroads undertook to engage in the elevator business. They felt it necessary to have a place to store the grain shipped over the railroad. The Federal Government prohibited the railroads from owning these elevators and the act was upheld by the Supreme Court.

The railroads decided that they should own hotels so that their passengers could have places to sleep as they transported them from one town to another. The Federal Government prohibited the railroads from owning these hotels or doing anything except feeding passengers in transit—on dining cars. The Fred Harvey eating houses, peculiar to the Santa Fe railroad, are not owned by the railroad company but are a separate company having a contract with the railroad.

The big packing companies also present a similar case. They decided that they should own butcher shops to get the proper distribution of meat. The Federal Government brought suit against such action and the Supreme Court put packing houses out of the butcher shop business.

The law prohibiting public utilities from engaging in the business of selling appliances is along the same line, it being thought improper for the utilities to be engaged in any business accessory to its main line.

In the New Haven Railroad v. Interstate Com. Com.—"U. S. Reports," Vol. 20 pp. 393 an even more pertinent bit of ruling is quoted from an English Case—"The Attorney General v. The Great Northern R. R. Co. 29 Law Journal (N. S. Equity) 794: " 'These large companies, joint stock companies, generally, for whatever purpose established, and more particularly railway companies, are armed with powers of raising and possesssing large sums of money—large amounts of property—and if they were to apply that money, or that property, to purposes other than those for which they were con-

150°

PIPING HOT WATER

At Low Cost With

COPPER COIL TANK HEATER

DELIVERS piping hot water at 150° for every domestic need, 24 hours per day. Built for long service with copper coil, bronze fittings, fire brick chamber, triangular grates, heavy shell in red vitreous enamel! Burns coal. Used also in combination hook-up with radiator to heat rooms or garage.

Aqua-Matic control tends fire 2 to 3 days with one fueling in average home!

Good profit in heater and installation. For prices and information write us or see your jobber.

SOLD BY THE LEADING JOBBERS

Note These Features:

- Check Damper
- Turn Damper
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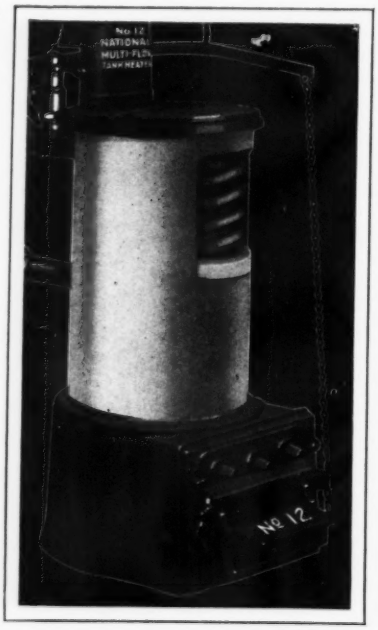
- Pressure Relief Valve
- Feeds at Top
- Large Copper Coil
- Bronze Fittings
- Fire Brick Combustion Chamber
- Triangular Grates
- Lift Draft
- Enclosed Base



NATIONAL MULTI-FLOW TANK HEATER

THE NATIONAL PIPE BENDING CO.
Established 1883
174 River Street, New Haven, Conn.
BOSTON NEW YORK PHILADELPHIA
Instantaneous and Storage Heaters

stituted, they might very much injure the interests of the public in various ways.'" This would seem to clearly indicate that the public utilities in selling merchandise are doing something that is illegal.

The utilities have fought the Kansas Utility Anti-Merchandising Law since it became effective in August, 1931. First, an injunction was secured which prohibited the county officials from arresting utilities who kept their merchandising business alive. Next, a case was brought before the Shawnee County Court at Topeka, Kan., to test the legality of the law. The decision handed down was favorable to the law. Then the case was carried to the Kansas Supreme Court for ruling. This case is to come before the Supreme Court of Kansas, October fifth.

Kansas people interested in this law feel that the fight of the utilities is only natural because Kansas being the first state to enact such legislation, other states will inevitably follow in enacting similar laws.

It has been found that salaries of the merchandising department of the utility company are charged to distribution; this brings up the cost of selling the utility to the point where the rates could be raised on the utility itself, and yet seem only reasonable with the cost of distribution.

PUT MERCHANTS AT DISADVANTAGE

The merchants of Kansas will have to acknowledge that they had become somewhat lax in their sales efforts before the utilities entered the merchandising field. But after the utilities entered the field, it was almost useless for the independent merchant to compete with them. Extended terms were allowed to those who bought from a utility company. It was not necessary for a customer to make any but a small down payment and then a long time was allowed before the final payment had to be made. An independent merchant could not afford to run his business on these terms. The utility company also proved to have a decided advantage in collecting bills. If the bill was not paid promptly the customer was led to believe that the utility could be discontinued. The independent merchant was unable to summon any such lever for collecting bills. This left him at a decided disadvantage. Of lesser importance, but an item in the advantage of the utility company was the lower prices offered for appliances by the utility company and the greater value offered for old appliances taken in on the sale.

The merchants now will be able to hold up their end of appliance selling. They have learned much from the methods of personal sales used by larger companies and by the utilities, themselves. The independent merchant has been studying the problem of appliance selling, and has noted what he lacked in years prior to the utilities entering the merchandising field. He has learned much concerning the arrangement of his wares; and of advertising, not only through his show windows and in the newspapers, but also through personal appeal letters. The independent merchant has found the value of personal solicitation and close attention to the needs of the community and its changing desires. It is only through these advanced ideas of selling that the independent mer-

chant will reach the goal of appliance selling that he has set out to reach.

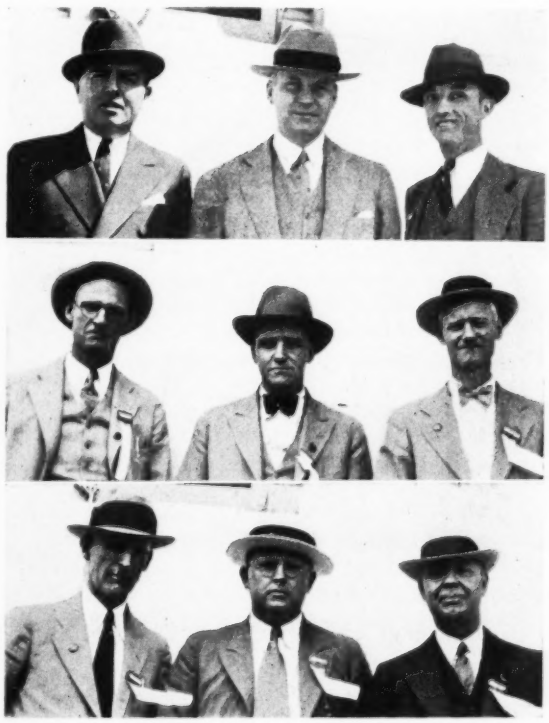
Even the utilities, when they are frank enough to admit it, are realizing that merchants can sell appliances to just as great advantage as they can themselves, and are selling appliances when given the fair chance to do so. Quoting from a letter from the McPherson Gas Co., McPherson, Kan., which observed the Utility Merchandising Law and closed out its merchandising department (McPherson is a town of 3,000 population):

July 11, 1932

From: L. L. Livingston
To: Gas Merchandise Dealers of McPherson
Subject: Merchandise sales
Gentlemen:

Since August 1, 1931, when the law prohibiting merchandising by utilities in Kansas went into effect, you have sold the following volume of gas merchandise—a total of 292 Gas Appliances.

On first thought you may say to yourself, 'not so good—I've sold more than that myself in the same period of time three or four years ago when times were good.' However, you must stop and consider comparatively your virgin field of prospects at that time against the re-



Top row, left to right: David Sherman, N. O. Nelson Mfg. Co.; A. L. McClurg, American Radiator Co.; T. G. Tackett, N. O. Nelson Mfg. Co.—Middle row: Percy A. Shaw of Little Rock and B. W. Locke of Pine Bluff, both directors of state association; O. Brooks, Arkadelphia.—Bottom row: J. W. Stansberry, Little Rock; G. R. Clark, Gurdon; H. O. Green of Tulsa, Okla., national treasurer.—Photos taken at the annual convention of the Arkansas Master Plumbers' Association, held recently at Little Rock

BLAKE
Water Heaters

K-1320 K-1325 K-1330 K-1335 Cross Section

Here is a profitable item that helps maintain your fall volume of business.

A practical economical means for furnishing hot water in connection with a 30 or 40-gallon range boiler. These heaters made in iron or brass will fit any style furnace or boiler. Their one foot of heating surface carries 35 feet of radiation with maximum efficiency.

Cleanout plugs at bottom. Openings tapped for either ¾ or 1-inch rim pipe. Each is water tested before shipping. See the Blake catalog for specifications and prices. Sold by jobbers everywhere.

BLAKE SPECIALTY COMPANY
ROCK ISLAND « ILLINOIS

EASY TO BEND

In actual comparison, Fretz-Moon Pipe bends 25% easier than ordinary steel pipe. It also bends freely to any requirement without distortion, flattening at the bend, opening at the weld or scaling of the protecting galvanized coating that insures long service life.

Try Fretz-Moon Pipe for your next installation, regardless of the severe bending required—you'll use it for all steel pipe work after that.

FRETZ-MOON TUBE CO., INC.
BUTLER, PENNA.

FRETZ-MOON
PIPE
BLACK AND GALVANIZED

G & C BOILERS
TRADE MARK REGISTERED

DURABLE AS A SKYSCRAPER!

G & C Copper tanks are built for durability and service—as sturdy and time-defying as the structure they serve! That's why they are specified by representative manufacturers of automatic storage heating tanks and industrial engineers.

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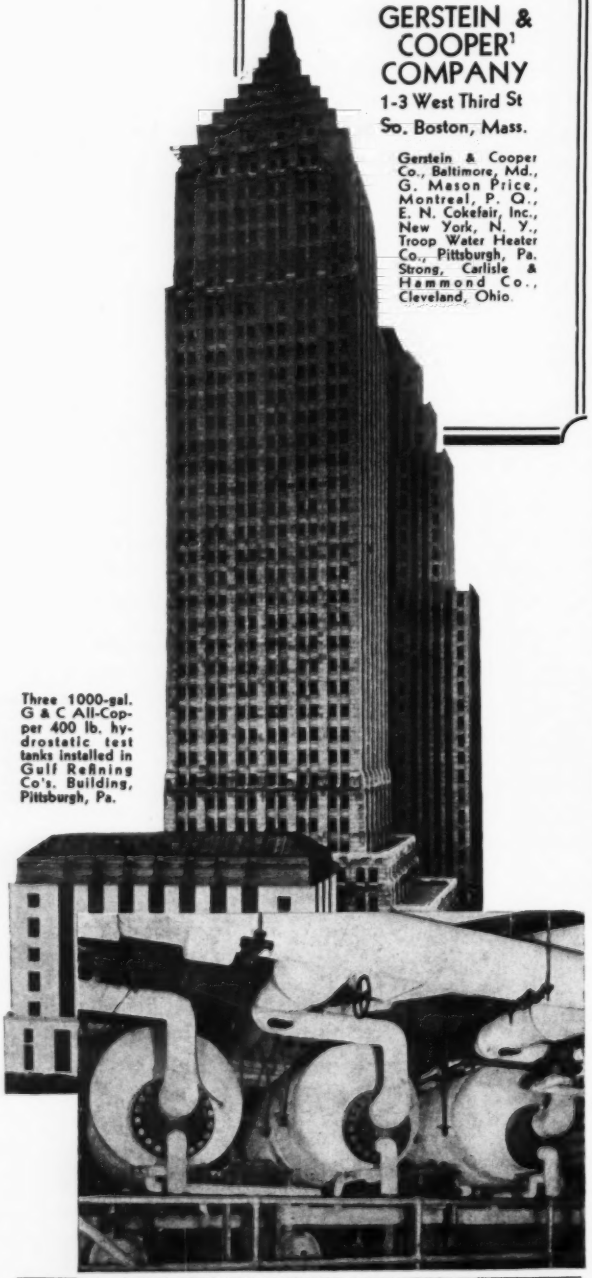


Three 1000-gal. G & C All-Copper 400 lb. hydrostatic test tanks installed in Gulf Refining Co's. Building, Pittsburgh, Pa.

COPPER FOR SATISFACTION

stricted field of this later period, brought about by your and our selling efforts in the interim. When this is taken into consideration and when you compare the present financial condition of our townspeople in general with what it was three years ago, I believe that you will agree with me that this is an outstanding sales record on your part. It intimates that our forced discontinuance of merchandising has not impaired our progress since you have maintained a high average in furnishing us additional load and new customers—two things we desire constantly.

A word about new customers. August 4, 1931, we had 1,205 customers in our lines—our records as of June 7, 1932, show that we were rendering gas service to 1,267 customers. We estimate 1,366 meters in McPherson as 100% saturation and, as you can see, we are 62 meters nearer that point than we were August 1st of last year.

I wish to take this opportunity to thank you sincerely for the efforts you have put forth—we have benefited along with you—and to let you know that the splendid co-operation you have extended my company and me is gratefully appreciated.

Yours for additional sales,
L. L. Livingston.

This letter would certainly seem to show that McPherson merchants are holding up their end of the appliance sale problem. In Kansas, as a whole, we feel that merchants are ready and able to do their share toward appliance selling.

Most of the utility companies are not ready to acknowledge this, however. A long extended fight is expected. One example of the methods to be employed is seen in the move of the utility companies in Kansas to get the Kansas utility commission to allow them to raise their rates in order to give away burners for furnaces. These burners are to be installed in the homes of desirous home owners free of charge except for a small monthly payment which, on first glance, does not seem a great deal; but when one considers that a good burner might be bought from any reliable dealer and installed for less in the long run than will be paid out merely for rent on the one installed by the utility company, the price seems rather high.

Every state in the union is looking to Kansas for the time when this Kansas Utility Anti-Merchandising Law will be adjudged legal. For in every other state in the Union examples are being found of utility monopoly just as these were found in Kansas.

(Signed) Carl McGregor,
Secretary, Kansas Master
Plumbers' Association,
Winfield, Kan.

P. C. G. A. Elects Officers at Del Monte Meet

At the convention of the Pacific Coast Gas Association, held at Del Monte, Calif., August 24 to 26, the opening session of which was presided over by President James L. Stone of Spokane, Wash., the following named officers were elected: Harry L. Masser of Los Angeles, president; George P. Egleston of San Francisco, vice president; and D. G. Martin, also of San Francisco, treasurer.

Philadelphia Master Plumbers' August Meeting

The August meeting of the Master Plumbers' Association of Philadelphia was favored with a large attendance. The speaker of the evening was C. W. Wanger, president of the Woodward-Wanger Co., who delivered a very informative address on Sales Promotion, based on the exhibit of two "shops on wheels"—a 1-ton and a 1½-ton truck. These trucks were inspected and admired by all who attended the meeting.

George Hicks was appointed chairman of the "Philadelphia-to-New Orleans" club, just organized for the benefit of those who wish to attend the next annual convention of the National Association of Master Plumbers.

Walter Raid reported that fifty new members have been admitted into the association, a good result of the membership drive under the present conditions. He also announced the prize winners—those who secured the most members, as follows: George Moeller, George Hicks, George F. Uber, Howard Neilson and Otto Dietzman.

Will Specialize in Air Conditioning

Thomas A. Ridder, a heating contractor of Boston, Mass., has made plans to specialize in air conditioning in the future and has changed his firm name to the Ridder Air Control Co., Inc. Mr. Ridder, who is vice-president of the Heating & Piping Contractors Boston Association, has already secured several air conditioning jobs.

Obituary

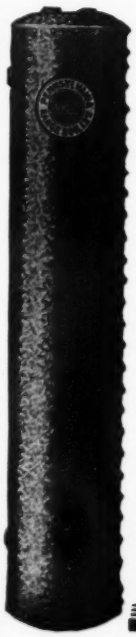
Thomas H. Monaghan

Thomas H. Monaghan

Thomas H. Monaghan, president of the heating contracting concern of Robert Gordon, Inc., of Chicago, Ill., died at his home in that city on Tuesday, August 11, in his 50th year. Mr. Monaghan was born in Philadelphia on May 30, 1883, and graduated from the Central High School in Kansas City, Mo., in 1900. From 1900 to 1911 he was connected with various heating contractors in Kansas City as draftsman, estimator or engineer. In 1911 he came to Chicago as engineer for Robert Gordon, and in 1915 he became president of the Robert Gordon Inc., and was closely connected with the construction of many large buildings, his concern being the heating contractor for the Merchandise Mart, the Union Station, the Field building, the Parcel-Post building and

A NEW SALES HELP

USE PENNSYLVANIA RANGE BOILERS



AN OVERSEAS CAP PROMOTES SALES AND GOOD WILL BOTH FOR YOU *and* PENNSYLVANIA RANGE BOILERS

These white caps, trimmed and lettered in red, help build your profits by keeping the name "Pennsylvania" before your customers . . . . and the performance of the boiler itself will make a friend of every customer. Caps are fastened in top opening of every boiler leaving our factory.

Order Thru Your Local Jobber

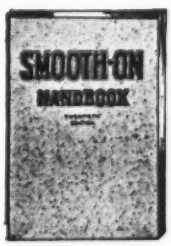
Complete line of *All Welded* and *Riveted and Welded* Galvanized Boilers.

JOBBERS: Send for sample of any boiler for 30 day inspection.

PENNSYLVANIA RANGE BOILER CO.
Established 1895
24th & Washington Avenue, Philadelphia, Pa.

TAKE THE GRIEF OUT OF EMERGENCY REPAIRS

HUNDREDS of emergency repairs and many routine maintenance jobs can be handled quickly, easily and cheaply with Smooth-On No. 1, which seals joints, cracks and breaks and holds equally well in any metal.



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Smooth-On No. 1 expands in hardening and when metallized becomes as dependable as the metal which surrounds it. Engineers and shop men prefer the Smooth-On method because of the simple cold application and the speed with which a reliable and permanent repair is assured.

Get Smooth-On No. 1 in 1 or 5-lb. can or 25 or 100-lb. keg from any hardware store or from us.

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Do it with SMOOTH-ON

WOLVERINE BRASS

Dependable

COMPARE! Compare Wolverine Brass Goods of *today* with the same goods of 1929! You'll find them even better. You'll find many improvements. You'll find even greater values. And you'll find, as always, the same high quality of materials—painstaking care and accuracy in machining—fine finish.

As ever, Wolverine Brass Goods remain completely dependable. As ever, Wolverine keeps faith with the plumbing trade.

WOLVERINE BRASS WORKS
GRAND RAPIDS, MICHIGAN
We Sell the Retail Plumbing Trade

WOLVERINE

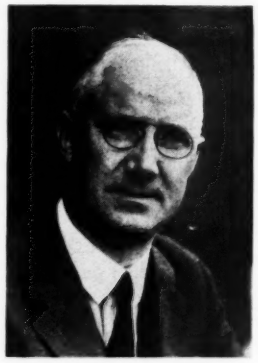
P. B. F. Fittings

Every Phoenix Brass Fitting is air-tested under water and rigidly inspected from raw metal to finished product.

Phoenix Brass Fittings Corp.
Irvington N. J.

the Daily News building—among others—in Chicago. Mr. Monaghan was a member of the American Society of Heating and Ventilating Engineers from 1914 until his death, and he was also an active member of the Chicago Master Steamfitters' Association and of the Western Trade Golf Association.

William E. Shaddock



Wm. E. Shaddock

William E. Shaddock, plumbing and heating contractor in Buffalo, N. Y., since 1910, died at his home in that city on Monday afternoon, August 29, following an illness of three months' duration, in his 53rd year.

Mr. Shaddock was born in Buffalo, N. Y., November 17, 1879, and spent all of his life in that city. He learned his trade with the plumbing and heating firm of Candee & Smith, and was associated with George Irr in his plumbing business from 1903 to 1910, when he engaged in business on his own account. Gradually his business became one of the largest in the plumbing and heating line in the state. Among his contracts were the installation of plumbing and heating systems in railroad terminals, city halls, colleges and hospitals, etc. Mr. Shaddock was a member of numerous organizations, among them being the Buffalo and New York State Associations of Master Plumbers (he was ex-secretary of the State Association), the Buffalo Builders' Exchange, the Buffalo Chamber of Commerce, the Knights of Columbus and the Elks. He was deeply interested in the welfare of Ireland and was a personal friend of Eamon De Valera, now president of the Irish Free State. He is survived by his widow and one son.

John S. Doyle

John S. Doyle, president of the plumbing and heating contracting concern of E. T. Doyle & Sons, Inc., at Albany, N. Y., died of a heart attack at his home in that city on Tuesday, August 30, in his 39th year. His widow, two sons and a daughter survive him.

Robert Warg

Robert Warg, a heating and ventilating engineer in Milwaukee, Wis., for many years and president of the National Blower Works before his retirement 18 years ago, died recently in his 65th year after a long illness. He is survived by his wife and one daughter.

James C. Dowling

James C. Dowling, vice president of the plumbing company of Boon & Sample, 3008 Ludlow street, Philadelphia, Pa., died at his home in that city on Tuesday, August 30. He was a member of the Master Plumbers' Association of Philadelphia.

Death of C. F. Troutwine

C. F. Troutwine

Christian F. Troutwine of York, Pa., died suddenly Aug. 12 of a heart attack. He had been in good health until taken suddenly ill.

Mr. Troutwine had been active in state and national association work for many years. He was a director of the National Association of Master Plumbers during the administration of President Albert J. Wilson. Last year he had again served the national organization as a member of the conference committee. He was at one time president of the Pennsylvania Association of Master Plumbers. His deep interest in organization affairs was always well known to his associates in the business so that he was frequently called upon to make special trips to assist in promoting the organizational and educational activities of national, state and local groups.

Mr. Troutwine had also taken an active interest in local political affairs having run unsuccessfully for mayor at the last election. Also he had served as city councilman. He was active in various civic clubs in York.

Master plumbers from all over the state attended the funeral, led by State President Walter J. Williams. Mr. Troutwine is survived by his widow and daughter.

Guy M. Burnham

Guy M. Burnham, plumbing and heating contractor at Upper Marlboro, Md., died suddenly of heart failure while attending a recent baseball game at Washington, D. C., between the Washington Senators and the St. Louis Browns. Mr. Burnham was in his 44th year at the time of his death, and he had been engaged in the plumbing and heating business in Southern Maryland since 1923. He is survived by his wife.

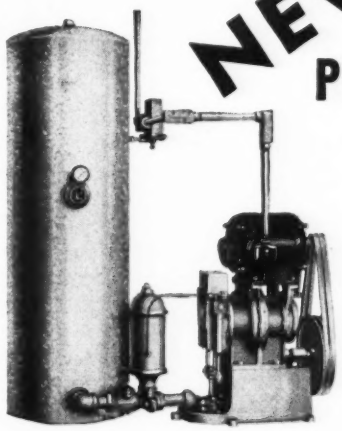
William Faust

William Faust, president of William Faust & Co., Inc., plumbing contractors of Wauwatosa, Wis., died recently as the result of carbon monoxide poisoning, in his 64th year. Mr. Faust was found dead in the garage back of his home by a son, Hubert, secretary of the firm. He is survived by his wife, three sons, and a daughter.

William Hunt

William Hunt, senior member of the firm of Wm. Hunt & Son, St. Louis, Mo., died at his home in that city Friday, August 19, after an illness of five months. William Hunt was one of the outstanding members of the Contracting Plumbers' Association of St. Louis, and his many friends regret the demise of such a fine character. His funeral was attended by many of the members of the association and a number of journeyman plumbers and supply men. The masonic order conducted the services at the Oak Grove Mausoleum.

WORKS ON NEW PRINCIPLE



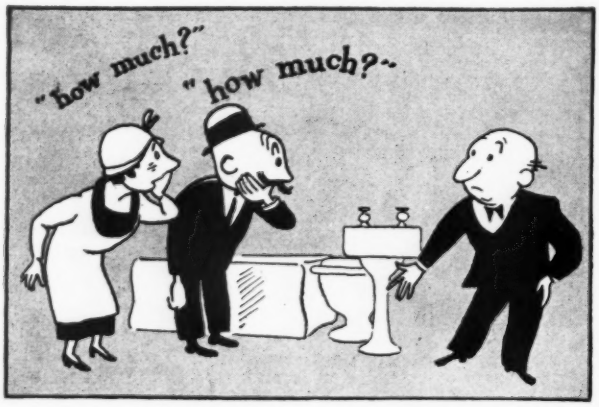
Dorward-Red Jacket Water Systems have power heads operating on a new, thoroughly tested principle. A Straight Line Motion is produced within the head. Every moving part turns a complete cycle, without noise, without vibration, with practically no wear . . . There are few working parts — no rods, pins, walking beams. Replacement of parts is almost unknown. With few parts and rotary action, there is greater capacity for the power used, with accompanying economy . . . No other system equals Dorward-Red Jacket Power Heads in performance . . . Dorward-Red Jacket Systems are now used for Residences, Farms, Country Homes, Schools, Hotels, Apartments, Hospitals, Summer Resorts, Tourist Camps — wherever a water system is desirable . . . Write for Catalog No. 11 containing complete information. Become familiar with this proven, this better system.

Capacities 200 to 10,700 gallons per hour. Compact, low down, perfectly machined, all moving parts enclosed and running in baths of oil.

RED JACKET MANUFACTURING CO.
DAVENPORT, IOWA
Manufacturers of Pumping Equipment for More than 50 Years.

DORWARD-
Red Jacket
WATER SYSTEMS

LOSING BUSINESS ON "*price*"?



T/N *makes them sign on the dotted line*

IT'S a rare bird these days who doesn't ask "How much?" first thing. Sales are lost just because the fixture doesn't *look* its value. No wonder the big trend to ONE-PIECE T/N!

Show your prospects T/N's modern, streamline design. They won't need blue-prints to see that here is outstanding refinement and beauty. Then when they hear the moderate price . . . !

T/N fits in corners, under windows, to save valuable space. T/N's glistening white surface is twice-fired vitreous china. Available too, in many harmonizing colors. T/N is *unusually quiet* in its flushing . . . non-overflowing . . . a cinch to install (just two simple connections to make).

Why not get full details . . . clip the coupon

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ONE-PIECE WATER CLOSET

W. A. CASE & SON MANUFACTURING CO. *(Founded 1853)*
1 Dept. 629, 33 Main St., Buffalo, N. Y.

Please send me the name of my T/N jobber. I understand there will be no follow-up except at my request.

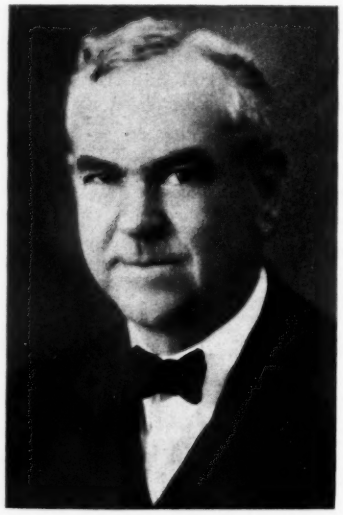
*NAME*_____

*ADDRESS*_____

Death of Lee Phillips

Lee Phillips of Lakeland, Fla., was drowned Thursday, August 18, while swimming in a lake there. His body was recovered several hours later. He was 53 years old and is survived by his widow and three daughters.

Mr. Phillips was in the plumbing business in Lakeland, having come to Florida from Hanover, Mass., about ten years ago. He served as president of the Florida Master Plumbers Association during the year of 1931-32, retiring from that office last May. Mr. Phillips was very popular among the members of his association and will be greatly missed. He had always been active in fraternal and church circles.



Lee Phillips

Survey—

(Continued from Page 60)

follow, relative to refrigerator work, which are undesirable. We find that a few cities do not allow the use of a refrigerator trap. Every means of disconnecting the refrigerator from the drainage line into which it discharges, should be adopted, and the use of a trap is one of these means.

We have found more than one plumbing code calling for the venting of refrigerator traps, and at the same time calling for an indirect waste connection. We are glad to say that the number of codes guilty of this ignorant demand are few in number. All we need to say on this point is that whenever an indirect connection is vented, a by-pass is set up for the entrance of drain air into the house. This is shown in the drawing.

Grease traps are very generally called for in plumbing codes, in connection with kitchen sinks in hotels, restaurants, clubs, etc., where much grease is made.

Another article will cover other drainage problems.

OUR READERS TELL US

J. L. Murphy Urges Technical as Well as Practical Training in Plumbing

To the Editor:

The time has arrived in the plumbing industry when it is essential, not alone to have a good practical knowledge of plumbing, but a good theoretical knowledge as well. Practical and theoretical knowledge make a very good combination which surely works out for the best interests of the plumbing industry as a whole.

Plumbers are being asked questions every day that require a technical as well as a practical knowledge of plumbing. Plumbers have always held that the plumbing business as a whole is made up of theory and practice and that claim is correct. If plumbing is going to advance in the future as it has in the past, it can do so only by education. That education will have to extend to the public and the proper means of getting that education to the public is by the men who are engaged in the industry.

There is no good reason that I know of why a journeyman plumber, a foreman plumber, or a contracting plumber, should not be able to explain to the public (who do not understand plumbing) the theory of plumbing as well as the practical side of it. This is surely a day of higher education, not alone in plumbing but in all of the trades. The man in the plumbing industry who has a technical knowledge as well as a practical knowledge has a big advantage over the man who has only a practical knowledge.

There are many courses being given in plumbing throughout the country that are very valuable to those taking the courses. For instance, there is a course given at New York University that is very useful to a plumber's helper, journeyman plumber, a foreman plumber, or a contracting plumber. A practical man or a man working at the business who completes this course is well equipped for the plumbing industry.

It has been my privilege to visit New York University and to examine into the course that is being taught in plumbing by Professor Walter S. L. Cleverdon. This course is surely a benefit to anyone taking it and I would recommend it to any man who is engaged in the plumbing industry.

The work begins with the water supply and ends with the sewage treatment or sewage disposal of a building or a group of buildings including complete plumbing drawings. In urban districts the subject of water supply is taken up with the tap (corporation cock), or wet connection, or three-way "T" in the city main, follows the house service supply lines and appurtenances to the point of consumption or location of fixture, and thence back as sewage through the soil and drain lines and house sewer to the public sewer; it also carries the accompanying foul air through vents to the outside atmosphere.

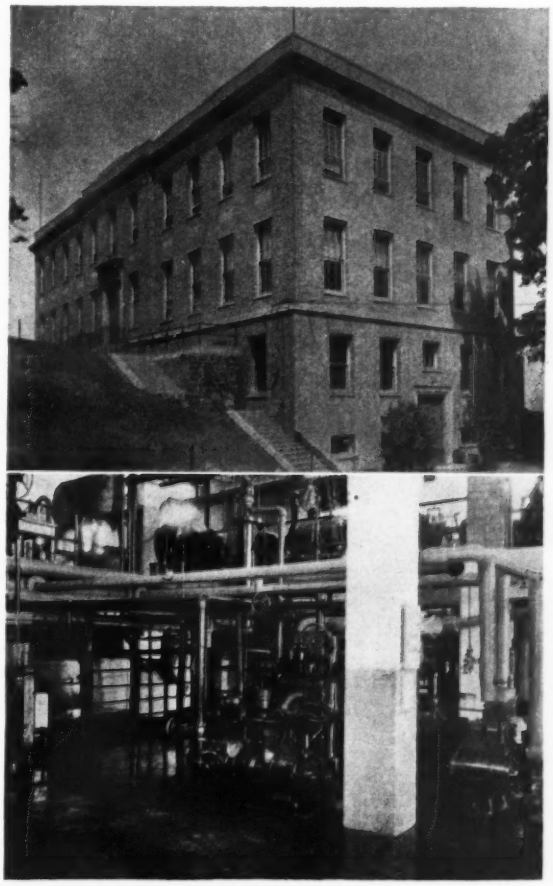
In rural districts, the water supply is assumed to be taken from a well, spring, or surface supply; it is followed through the building or buildings as above described and the study ends with the disposal of the sewage in a river or other suitable body of water, or with sewage treatment.

There is a sufficient study of hydraulics and pneumatics to make clear why pipes and accessories of certain capacities and quality are required to take care of the peak loads of water supply, sewage disposal, and the foul air accompanying it. Glass traps and other appurtenances of a similar nature are used to visualize what actually happens when these accessories are in service.

Attention is given to bacteriology and chemistry in discussing waters for potable and industrial purposes.

Many problems encountered in actual practice by members of the classes are brought to the hydraulic laboratory and classroom for solution.

Special effort has been made to establish bases on which to found suitable units of consumption, maximum



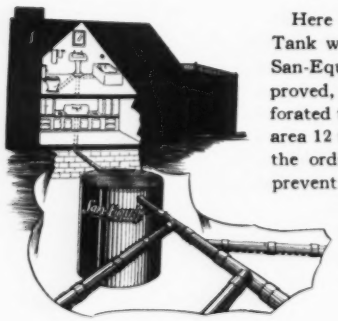
Exterior and interior views of Sage Hydraulic Laboratory, New York University, where Plumbing Department is located

SELL A COMPLETE DISPOSAL SYSTEM *For the Unsewered Job*

THE most expensive bathroom and kitchen fixtures are useless if the sewage is not disposed of properly. Insure the correct operation of every unsewered plumbing job by selling and installing a complete disposal system—both tank and drainage. Here's how you profit:

1. *Increased profits from both tank and drainage field.*
2. *Easier to sell quality fixtures throughout the entire job.*
3. *Goodwill that brings you new customers.*

You can recommend San-Equip Systems with confidence. San-Equip is the only nationally advertised, trade-marked system. San-Equip supplies an adequate field service to help you with your problems. And San-Equip has been approved by leading health officers everywhere. In fact, San-Equip's leadership in this field is so firmly established that over 50% of the sewage disposal systems installed by leading plumbers in the United States bear the San-Equip Trade Mark.



Here is a San-Equip Septic Tank with a Drainage Field of San-Equip Filter Pipe. An improved, unbreakable pipe, perforated to increase the drainage area 12 to 20 times per foot over the ordinary tile. Tight joints prevent clogging and preserve alignment. Lays quicker with no breakage. Fittings permit a varied layout.

★ A Certificate of Approved Equipment backed by the largest manufacturers of home disposal systems accompanies every San-Equip System as a permanent record of the Installation.

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SEWAGE DISPOSAL

rates of consumption for fire and ordinary use, and the converse, the sewage disposal; or what might be called in either case the peak loads.

High buildings with their problems of excessive pressures and high velocities are treated at length with particular attention paid to the division of the supply and pressure zones and the necessary equipment to supply these zones.

The results obtained in the laboratory are applied to classroom work, particularly in connection with studies of plumbing codes.

Plumbing 1. Hydraulics and Pneumatics. First Term. Wednesday, 7:00-10:00 p. m. (at University Heights) 30 hours laboratory; 30 hours recitation.
Fee: $38.00 tuition (including laboratory fee).

A practical application of these subjects to complete plumbing systems, paying particular attention to the action of water and air in water supply, soil and vent pipes with their various fittings; the action of the siphon and its application to supply, soil and vent lines and their appurtenances; emphasis is laid on the action of all types of traps and vents, glass traps are used wherever possible to visualize results. Finally there is a consideration of the production and reduction of water hammer in plumbing systems.

Plumbing 2. Plumbing Systems and Codes. Second Term. Wednesday, 7:00-10:00 p. m. (at University Heights). 45 hours recitation. Fee: $30.00 tuition.

A study of the application of hydraulics and pneumatics as obtained from laboratory work to various leading codes and plumbing systems as laid out by prominent sanitary engineers.

Plumbing 3 and 4. Design and Estimating.
First and Second Terms.
Monday, 7:00-10:00 p. m. (at University Heights).
Thursday, 7:00-9:00 p. m. (at Washington Square).

Plumbing 3—First Term.
45 hours recitation; 60 hours problem work.
Fee: $58.00 tuition (including laboratory fee).

Plumbing 4—Second Term.
45 hours recitation; 60 hours problem work.
Fee: $58.00 tuition (including laboratory fee).

Students are required to make a complete set of plans and specifications for a plumbing system of a large building and then make a complete estimate of the cost of this system. Last year they took a twenty-story apartment house located on a plot 100 ft. x 100 ft. Their plans, specifications, and estimate included the water-supply piping with pumps, tanks, hot-water heaters, and other appurtenances, the soil, drainage, and vents, stacks and house sewer including pumps, sewage ejectors, and other accessories, fire lines, sprinkler system, stand pipes, tanks, and pumps.

New York. (Signed) J. L. Murphy.

Did the Heating Contractor Under-Estimate the Value of His Advice?

To the Editor:

An out-of-town concern leased and equipped a building in our city. They have an architect on their board. This architect and their own engineer designed the layout. Use demonstrated that they were paying too much for steam, and the architect asked for suggestions and we made them. He told us to go ahead and we did so. Then it developed that the steam meter selected by their own engineer was not fair to them as purchasers of steam, so we were told to check that and make any required changes. All of this was done. Then we had to

sit in with the local people selling the steam and determine what rebate, if any, was due to this concern; and in the final analysis we were able to show them a saving of $251.00 per month for 16 months.

They paid us for fitter's services, materials, etc., and advised us that they expected to pay for other services. Well that was a problem. I suggested compensation based on an amount equal to the saving for one month ($251.00), and they paid it so quick that I am wondering if I made a mistake and should have made it four times that.

It does seem that their own architect and engineer should have been better able to make these suggestions than we were, but evidently such was not the case.

W. & W.

A Suggested Remedy for the Plumbing Industry

To the Editor:

The plumbing industry consists of three distinct, but not separate branches, namely master, journeyman, supply and manufacturing. However, there are those who may not agree with the statement, not separate.

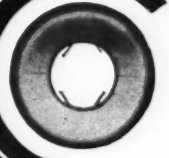
But let us see how it works out. First, there would be no masters if there were no journeymen, for, as the rule goes, one must first be a journeyman before he becomes a master, and neither would get very far if it were not for the maufacturer, or supply house. Therefore, the supply end of the combination would be equally at a disadvantage without the master and the journeyman.

That being the case, why should they be separate? Therefore, why should an organization be formed by either one, or two, or the whole three for that matter separately, when one depends so much upon the other for its existence? Why not form an organization consisting of all three branches, for the purpose of co-operation and for the good of all concerned? By so doing practically all the ills would be eliminated.

It would work somewhat in the following manner: First, arrange for a get-together meeting with just as many from each of the branches as possible. Appoint committees to find ways and means as to how they can work together. Then the same committees should take the problems step by step as they find them, and by adopting clean, open and aboveboard methods for conducting the affairs of the organiza-

William F. McDonald and J. J. Boyle, both of Buffalo, and Mr. Boyle's grandson; A. R. McGonegal, Washington, D. C., past president of the American Society of Sanitary Engineering, at this society's recent annual convention in Rochester, N. Y.

PERFECTION
FLOOR and CEILING PLATES



The ease with which PERFECTION Floor and Ceiling Plates can be installed will make them favorites with you.

Once you have snapped them on the pipe, they'll hold snug always.

It is best to stock up with them so that you can have them at a moment's notice without delay.

Ask your jobber to supply them to you.

The BEATON & CADWELL MFG. CO.
Established 1894
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Something New!
DAHLQUIST
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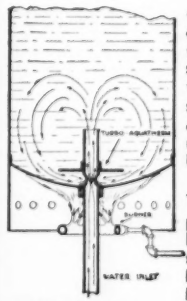


Turbo-Aquatherm
A new patented device which prevents mud from accumulating in the boiler.

The principal enemy of efficiency and long life in any hot water boiler is the gradual accumulation of sediment and impurities which occur in all water supplies and which gradually, due to gravity, accumulate in the bottom of the boiler.

The Dahlquist Patented Turbo-Aquatherm is simplicity itself but positively keeps all foreign matter in suspension assuring the user fresh, clean hot water fit for cooking and drinking purposes at all times. (See diagram).

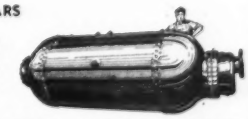
No surges of muddy or rusty water—no more danger of burnouts. Very inexpensive and can be had with any Dahlquist Copper Boiler for home use.

WRITE FOR PARTICULARS

Super-Aquatherm Gas Underfire

Automatic Gas Unit With Side Arm

Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.



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SUPER
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WATER SYSTEM

400 G.P.H. $89.00!
BRAND NEW—
COMPLETE WATER SYSTEM
WITHIN A SINGLE TANK!

The radically new design of air-volume control is combined with the suction strainer in a simple rugged unit. High grade diaphragm check with brass seat. Strainer screen readily accessible.

Motor and Pump Assembly quickly and easily removable through top of tank without disturbing any piping connections. Furthermore, the complete motor is then instantly detachable from the pump shaft.

Worthy of special note is the absence of the usual pump Packing Gland and the annoyances and leakages caused by it. There is no packing gland!

FIG. 8763—25
25-GALLON TANK

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DECATUR PUMP COMPANY DECATUR, ILLINOIS

The Leader

Reichert profit-makers for the contractor

The Leader Tank Ball and the Federal Tank Float, of typical Reichert quality, will make profits for those contractors who adopt them as regular equipment.

The Leader Tank Ball is constructed of the finest material, well made, and will seat perfectly at all times. Its big feature is price and a long life of service.

The Federal Tank Float is designed for the service that is particularly severe, factories, schools, public buildings and the like, where an ordinary float will not meet the service demand. Ask your jobber. He'll tell you all about them.

THE REICHERT FLOAT
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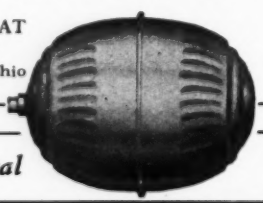


The Federal

tion, there would be an inducement for practically everyone in the industry, to lend a hand. And what would be more helpful? And who is there that dare say it is not possible? At any rate, it surely is worth an attempt, as the following are some of the possibilities:

First, a friendly feeling and a co-operative spirit. Masters would then be masters and journeymen would then be journeymen in the true sense of the word, and it doesn't necessitate much of an optimistic analysis of the picture, to know that the established and not the irresponsible supply would share in the satisfaction at least, enjoyed by all.

As it is at present, the unemployed journeyman is doing a certain percentage of the work and is buying his material where he can and who can blame him? Self-preservation is the first law of nature. The master is being harmed and the established supply houses are suffering as much, or more, than any of them, because they have more at stake. But that is not the worst of it, plumbing codes and standardization is being ignored and in time will be completely wiped out until such time as conditions become so serious that it will necessitate the rebuilding of them again—which is not a condition to wish for. All of this can be avoided by proper co-operative organization.

At present we have just a handful of master plumbers trying to fight the battle for everyone. For them, sympathy and not criticism is much in order, for no one familiar with the conditions and circumstances would say that they have not been and are not trying their level best to right the applecart that has been upset. They surely would welcome a helping hand and in my opinion this can be offered best by a co-operative organization.

Those eligible for membership should be, every master plumber, every journeyman, and every representative of a supply house (manufacturer or jobber), and the heads of every established jobbing establishment pertaining to the industry.

The dues to fit the necessity should not exceed fifty cents per month for each member, unless the activities were such that a greater amount would be required, in which case the benefits derived would justify the increased amount.

The possibilities for good to be derived from such an organization are so great and numerous that is is not possible to enumerate them here. Why should the writer try to do so when there are so many competent individuals connected with the industry much more capable of performing the task. Therefore, it is the hope of the writer that a constructive idea has been presented to the extent that interest will be aroused to real, live action; and knowing the rank and file as he does from twenty-five years of dealing with them, he feels that the time spent in this thought is not in vain. But before concluding, he would like to ask everyone who reads the above, to analyze fully the importance of having the co-operation of the rank and file of the journeyman plumbers.

It is further understood that the above will not in any way disturb existing organizations.

(Signed) C. H. Heagle,
Chicago.

New Sales Policy—

(Continued from Page 37)

modeling jobs and who, I might say, holds a very important position in the industry.

"Last, but not least, we have the merchandising contractor whose efforts embrace to some degree all classes of work above mentioned, plus the store, showroom and sales department which naturally adds materially to his expense of doing business. Nevertheless, he is placed in competition with all of these others.

"It is easy to understand that there is a difference in the amount of overhead expense involved in the different set-ups mentioned and just how an equitable condition can be reached is a somewhat difficult problem. It may be true that the advantages represented by the more attractive set-up will offset the added expense of same, but under any of the above mentioned conditions there is a selling expense that must be considered and the seller must make at least enough profit on the sale of his materials to cover the expense involved. Determining this is surely one of the problems of the industry and all branches should work together in harmony to that end.

WILL CHANGE PRESENT METHODS

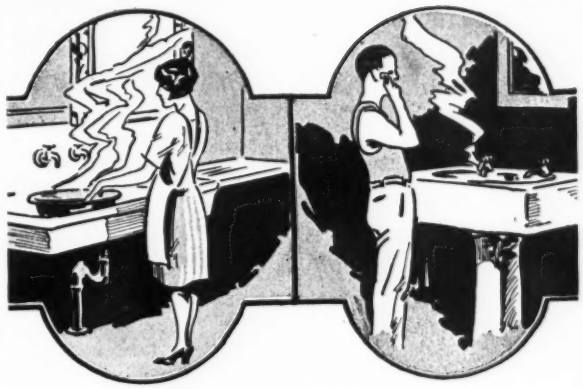
"Can the manufacturer intelligently set the resale price arbitrarily with any assurance of being correct? Is it not the problem for the whole industry, rather than for one branch to make such a decision? It is my opinion that this policy, if carried out, will change our present method of doing business.

"This industry, with its several branches, is like a chain—each link interlocking with the next in line, and if any of these links are broken the flow of materials through the regular channels will be interrupted. One of the reasons for holding this chain intact is profit, and if we deny any branch of the industry the necessary profit, that link in the chain is automatically broken.

"Amplifying this just a little, assuming that we handle a certain manufacturer's line of enamelware, and that concern so handles its promotion program that we are limited to a margin of profit that will not pay operating expenses, we are automatically forced out of business, or must seek new lines or pursue new methods of doing business. I hope there is no faction in the industry at this time that would deny us all a place in the sun, but a system that relieves us of the necessary returns in profit will accomplish just that thing.

"In our present anxiety and effort to bring about a more profitable condition in the industry we must not overlook the fact that there is very little business available in the building field and that manufacturers, wholesalers and contractors are set up for peak production.

"While the problems of all wholesalers, whether they are the large chain type, or the independent, are very similar; nevertheless the plan and motives of these types of wholesalers may differ and I think we have reached the time in this industry when independent wholesalers should have a common meeting ground where matters of mutual interest could be discussed and policies determined that would be beneficial to the whole industry."



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Tank Heaters

at the very lowest fuel cost are supplying plenty of hot water for thousands of home folks.

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Tank Heaters

are made in a wide range of sizes . . . *They help balance the household budget.*

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BELLEVILLE ILLINOIS

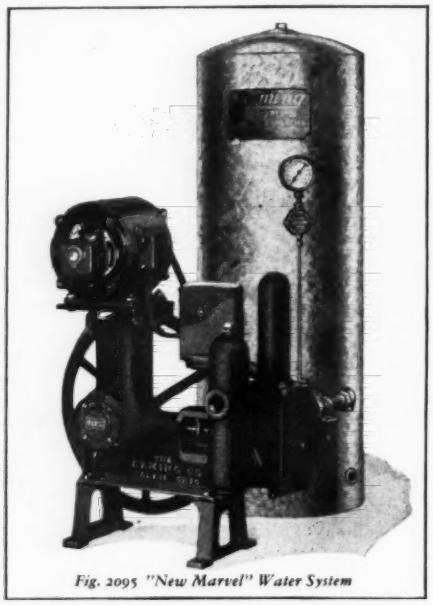


Fig. 2095 "New Marvel" Water System

Think What 14 Years Have Done to Help You

HELP YOURSELF!

The past 14 years have made history in manufacturing and selling water-supply systems. Think what these years have done for *you.*

1. Deming prices for 1932 are *actually lower than they were 14 years ago.*
2. For more than 25 of its 52 years, Deming has specialized on automatic water-supply systems; has expanded its lines and improved them wherever possible.
3. The "New Marvel," shown above, is typical. Roller and Ball Bearings reduce friction and promote smooth, quiet performance.
4. Attractive design, precision in manufacture, and sturdy, well-balanced construction, earn your customers' appreciation, good will and confidence.

The Deming "New Marvel," and other Deming Water Supply Systems, will "help you to help yourself" in building up a generous, steady volume. Interesting Catalogs and full information are yours for the asking!

THE DEMING COMPANY
Established 1880 Salem, Ohio

Deming

NEW TRADE LITERATURE

Broadside Featuring Concealed Bath and Shower Fixtures

Test-Tite Company of Philadelphia, Pa., has issued a broadside, 10½ x 16 in., illustrating and describing its concealed bath and shower fixtures, radiator valve handles, and chrome soap dishes.

Folder on Gate Valves, and Stop and Waste Valves

Hammond Brass Works of Hammond, Ind., have published a folder with illustrations and descriptions of their brass gate valves and compression stop and waste valves, which are now individually boxed.

Portable Arc Welding Equipment

Hobart Brothers Co. of Troy, Ohio, has issued two folders illustrating and describing its arc welding equipment including portable or stationary, electric driven welder, belt or coupling driven welder, and gas engine driven welder.

Bulletin on Single Pipe Vapor Heating System

Gorton Heating Corporation of Cranford, N. J., has issued bulletin No. 96, featuring its single pipe vapor heating system and its quarter turn packing lock valves. The bulletin consists of 8 pages, 8½x11 in., and it is well illustrated.

Folder Concerning Trip Lever, Pop-Up Bath Wastes

Hays Manufacturing Co. of Erie, Pa., is distributing a folder illustrating and describing in detail the construction and operation of its trip lever, pop-up bath wastes, which are designed for built-in tubs. A slight touch on the lever handle instantly brings the stopper into action.

Recording Thermometers

C. J. Tagliabue Mfg. Co. of Brooklyn, N. Y., has issued its bulletin No. 1040, featuring miniature size recording thermometers and square-case dial-indicating thermometers. These instruments are designed for use in connection with refrigerating, air conditioning or heating equipment and they are illustrated and described in detail in this bulletin.

A Cleaning Shower Head

Mueller Co. of Decatur, Ill., has issued a neat circular featuring a cleaning and variable stream shower head, with fifty-four floating chrome nickel, stainless steel, tapered pins inserted in a plate, attached to a yoke, operated by a lever handle. As the pins move in and out they punch out all water encrustments such as lime, alkali and corrosion from the holes in the face of the shower head.

Oil Furnace for Automatic Heat

General Electric Co. of Schenectady, N. Y., has issued a twelve-page catalog and a four-page circular, both 8½x 11 in. in size, and both featuring illustrations and descriptions of its new oil furnaces for hot water, steam and vapor heating systems. In attempting to describe the operation of these oil furnaces the catalog says: "With the new oil furnace a plentiful supply of hot water, steam, or vapor (whichever heating system you have) is on hand at all times ready to be released to the radiators whenever the thermostat calls for heat. Naturally the radiators get hot in minutes, not hours. And the sensitive thermal control automatically sees that the heat is there when you need it."

Catalog of Electric-Heated Steam Boilers

Commonwealth Electric and Manufacturing Co. of Boston, Mass., has issued a 12-page catalog, 8½x11 in. in

size, describing and illustrating its new line of small steam boilers, electrically heated, for the generation of process steam in comparatively small quantities up to 10 boiler horsepower. These small electric steam generators and their various applications are comprehensively described in this catalog.

Bulletin on Limit Load Conoidal Fans

Buffalo Forge Company of Buffalo, N. Y., has published its bulletin No. 2884, illustrating and describing its limit load conoidal fans, whose wheels have a deeper and wider blade than the company's previous designs and are very rigid on account of a patented double curved feature. The bulletin stresses the point that a different number of blades in the wheel and inlet vane has a quieting effect on the operation of these fans.

Broadside on New Convection Type Radiator

American Radiator Company Division of American Radiator & Standard Sanitary Corp. of New York City is distributing a broadside, 18x14 in. in size, illustrating and describing its new non-ferrous, convection type radiator, with wide-spaced flues, oval shaped copper tubes, electrically welded connections, light weight and scientific arrangement of extended surface. The broadside is printed in three colors, brown, black and green, and it is very attractive.

A High Strength Weldable Material for Rustproof Tank

The American Brass Company of Waterbury, Conn., is distributing an eight-page bulletin, 8½ x 11 in. in size, featuring its high strength, weldable material for rustproof tanks and pressure vessels. This material or metal is copper, hardened and strengthened by the addition of carefully controlled proportions of silicon and manganese, and it is known as everdur metal. This material is being used in the construction of many automatic water heater tanks, and in tanks with capacities from 1 gallon to 20,000 gallons, and it is manufactured in the form of sheets, rods, rivets, tubes, shells, wire in coils, and casting ingots.

Air Filters for Ventilating Systems

Coppus Engineering Corporation of Worcester, Mass., has issued bulletin F-320, consisting of 8 pages, 8½ x 11 in. in size, featuring its dry air filters for ventilating systems. The bulletin is printed in two colors, black and blue, and it is well illustrated. The filter element in these filters consists of special all-wool felt, in which the barbs of the wool fibers catch and hold the most minute particles of dirt. In addition to installation diagrams and other illustrations, the bulletin contains many reference tables and other technical data of interest to the ventilating engineer and contractor, as well as to manufacturers of ventilating equipment.

Catalog of Air Filters

Owens-Illinois Glass Company of Toledo, Ohio, is distributing its new catalog of air filters, a 16-page book, 8½ x 11 in. in size, illustrating and describing in detail its line of glass wool air filters, and the manner of their application to all types of filtering problems. This new type of air filters has an efficiency of 96 to 98 per cent, according to this catalog, and the glass wool filter medium is largely responsible for this high efficiency. It is made in the right proportions of coarse and fine wool and is automatically machine packed in a uniform "jack straw pattern." This automatic machine packing assures a uniform filter by eliminating the human element in hand packing. Other features stressed in this catalog are: "Glass wool, being non-absorbing, leaves all the adhesive on the surface free to collect and hold dust. The fineness and density of the glass wool filter medium increases from the intake to the exhaust side of the filter, forcing the

ARMSTRONG BROS.

The right vise to take to the job

This is the vise to take to the job, to throw in the bag for rush calls It is light, compact, strong—has sufficient capacity to meet the situation, will hold heavy pipe securely, yet will not bend the smallest or lightest (Patented Feature). ARMSTRONG BROS. Chain Vise has 1-piece drop-forged jaws, drop forged base and handle, an alloy steel screw and a proof-tested chain.

Meets Any Service Situation

With an ARMSTRONG BROS. Pipe Vise Saddle, you take your "bench" with you, right to the point of work. This saddle provides a secure base for all ordinary size hinged, open-side or chain vises. Attaches to any round or square post or support, instantly. It is one of the ARMSTRONG BROS. patented pipe tools.

Write for Catalog P-10.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., CHICAGO, U. S. A.

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

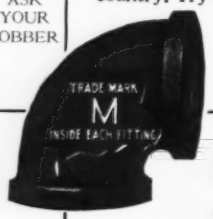
The Worcester line is complete. Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

The Dependable Line

The Acheson line of Brass Fittings is a most complete and dependable line, and is accepted as the standard by contractors all over the country. Try them next time you need fittings. The difference is profitable to you.

ASK YOUR JOBBER



ACHESON MFG. CO.
RANKIN PENNA.

ACHESON
BRASS FITTINGS

THE "MODERN" RANGE BOILER

30 and 40 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.

STEEL
IRON

CHALLENGE NIPPLES

BRASS
COPPER

a quality product at a competitive price

FRICK - REID SUPPLY CORPORATION
Nipple Division
117 Sandusky St., N. S. Pittsburgh, Pa.

"ACME"
Bevelled Bibb Washers

The name "ACME" is stamped on every washer

A Bibb Washer which puts an end to faucet chattering or rapping. Will not cut, groove or swell; allows full waterway. Furnished in seven sizes, 100 to the can. Or in the Handipak are 100 of assorted sizes.

LAVELLE RUBBER COMPANY 320 W. Illinois Street Chicago, Illinois

dust-laden air to encounter an increasingly tortuous path as it passes through. Each unit contains two such filters in series, making the path doubly tortuous, thus presenting insurmountable obstacles to the least particle of dust."

Announces New Water Supply System

Decatur Pump Co. of Decatur, Ill., has just mailed a neat folder, 11 x 17 in., announcing a new complete water supply system within a single tank, with a capacity of 400 gallons per hour.

New Catalog of Revere Copper & Brass, Incorporated

Revere Copper & Brass, Incorporated, of New York City, is distributing a new 76-page catalog, 8½x11 in. in size, describing and illustrating its products, such as: Sheet copper, copper anodes, copper in rolls; sheet, roll and strip brass; nickel silver, phosphor bronze; roll and strip herculoy; thin metal in rolls; naval brass plates; sheets of Muntz metal, naval brass and Roman bronze; manganese bronze; rods and wire, drawn copper, copper bar and shapes for electrical purposes; extruded shapes of brass, bronze, nickel silver and aluminum; brass pipe, seamless tubes and pipe of copper, brass and bronze; pure copper pipe for water supply; lock-seam tubes of copper, brass, bronze, nickel silver, zinc, aluminum and steel; die pressed or hammered forgings of brass copper and bronze; welding rods, soldering coppers, and rivets and burs. Tables of areas of circles in square inches and many other tables of weights, dimensions and pressures add much to the value of this catalog as a book of reference.

For Modern Bathrooms and Kitchens

To impress consumers with the fact that now, while prices of plumbing fixtures are lower, is the right time to build or modernize, the Kohler Co. of Kohler, Wis., has published a new booklet, entitled, "To Help You Plan Modern Bathrooms and Kitchens With Kohler Matched Sets," 20 pages, 6x9 in., which illustrates a number of matched sets, gives a chart of suggested color schemes for bathrooms, introduces a new double compartment sink, urges a downstairs washroom and lavatories for special needs, and shows other fixtures, fittings and accessories. Two folders accompany the booklet, one, entitled "Plumbing for the Home," presents three modern bathroom sets, while the other is devoted exclusively to closet seats and is entitled, "The Seat of Permanent Beauty and Cleanliness." Both the booklet and the folders are printed in colors, and they are attractive specimens of the modern printer's art.

A History of Refrigeration

York Ice Machinery Corporation of York, Pa., has published a copiously illustrated book of about 100 pages, 8⅝x11¼ in. in size, entitled "Cold Magic," which tells the story of the progress of refrigeration during the past fifty years, its value to commerce and industry, and its relation to our everyday lives. The part refrigeration plays in the following industries and plants is fully covered by descriptions and illustrations: The ice-making industry, the meat packing industry, the dairy industry, the ice cream industry, refrigerated cars, ships and storehouses for fruits and fish, etc,, air conditioning for human comfort, the baking industry, the beverage industry, the scientific storage of fur, the rubber industry, etc. Following this is an interesting account of the development and manufacture of the line of ice machinery in the various plants of the York Ice Machinery Corporation. This part of the book is also well illustrated with views of the many processes through which the machinery must pass before it is ready to be shipped, such as grinding, drilling, welding, bending, annealing, testing, etc., etc., etc. Views of the corporation's plants at York, Pa., and Canton, Ohio, are also shown.

NEW CONTRACTORS & INCORPORATIONS

San Francisco, Calif.—The Peterson & Brady Co. has opened a plumbing and heating business at 259 Clare street.

Ocean City, N. J.—Frederick S. Pieterle has opened a heating, ventilating and sheet metal shop at 341 Central avenue.

San Francisco, Calif.—W. B. Root, Jr., has opened a plumbing and heating business at 1026 Valencia street in this city.

Detroit, Mich.—The Warner Plumbing & Heating Co., 3957 Grand River avenue, has been incorporated with a capital $2,000, all subscribed and paid in.

New York, N. Y.—The Seaboard Plumbing Specialty Company has been chartered, with a capital of $20,000, by C. A. Jacobs, 1440 Broadway, and associates, to establish a general plumbing business.

Bridgeport, Conn.—William Loveridge has opened a plumbing and heating establishment at 190 West avenue. Mr. Loveridge has been connected with the plumbing business of H. T. Rock for the past 14 years.

Boston, Mass.—C. S. Stubbs, formerly with Stubbs Bros., heating contractors in this city, has organized a new heating contracting company under the name of C. S. Stubbs Co. The new concern is located at 180 Harrison avenue in this city.

Newark, N. J.—With a capital of $100,000 the firm of Joseph Eckles & Company, Inc., has been chartered, to establish and operate a plumbing and heating contracting business. The local law firm of Sojnow & Grunt represents the new concern. .

Norwich, Conn.—The Robert Goldsmith Plumbing & Heating Co. has been incorporated with a capital of $10,000, to conduct a plumbing and heating contracting business. The incorporators are Robert Goldsmith, Sarah Goldsmith and Joseph B. Pysyk.

Mamaroneck, N. Y.—The Lanza Plumbing and Heating Company has been organized and incorporated with a capital of 50 shares of no par common stock, to establish and operate a plumbing and heating engineering and contracting business. The new concern is represented by the local law firm of Rubin & Rubin.

BUSINESS CHANGES

Brighton, Mass.—A. I. Russell has moved his plumbing and heating business from 304 Washington street to 9A Henshaw street.

San Francisco, Calif.—Edward Steward has moved his plumbing and heating business from 530 Pine street to 600 California street.

New London, Conn.—The William Van Kueren Co. has moved its plumbing business from 28 Methodist street to 13 Washington street.

Springfield, Mass.—The Wm. P. Brown Co. has moved its plumbing and heating business from 25 East Court street to 31 Sanford place.

Williams, Ariz.—H. L. Brantingham has purchased the Williams Sanitary Plumbing Shop, including equipment, stock and lease, from Mrs. Florence Nebe.

MOORE VALVES

Mean More Safety

PRESSURE RELIEF

PRESSURE-TEMPERATURE

PRESSURE-VACUUM

PRESSURE-TEMPERATURE-VACUUM

THERMO SHUT-OFF OIL VALVE

Standard and Special Valve Equipment for Domestic Hot Water Boilers, Pressure Tanks, Pumps, etc.

J. W. MOORE VALVE CORP.
EVERETT MASSACHUSETTS

Complete Thermostatic Control

The volume of hot and cold water passing into the valve will remain constant at the degree at which the temperature indicator is set, because this is controlled by thermostatic coils.

This feature is as positive as day and night and is the reason for the growing preference for Leonard Water Mixing Valves.

Write us for the Leonard story. Let us show you the profit possibilities on a Leonard installation.

Leonard
WATER MIXING VALVES

LEONARD-ROOKE COMPANY
Incorporated 1913
PROVIDENCE RHODE ISLAND

WHAT WOMEN ARE DOING

BY DOROTHY EDWARDS

Officers of National Auxiliary Named

Mrs. J. Preston Perham, president of the Women's Auxiliary to the National Association of Master Plumbers, has just announced the officers, directors and state presidents, who will serve during the 1932-1933 term, as follows:

Officers

The officers of the National Auxiliary are:

Mrs. J. Preston Perham, president, 214 Spring street, West Roxbury, Mass.

Mrs. Wm. Kuehne, 1st vice president, 2917 Eads avenue, St. Louis, Mo.

Mrs. Robert Liss, 2nd vice president, 1919 Belmont avenue, Chicago, Ill.

Mrs. F. C. Kuetemeyer, 3rd vice president, 3408 N. Downer street, Milwaukee, Wis.

Miss Emily I. Donoghue, corresponding secretary, 98 Woodland avenue, Melrose Highlands, Mass.

Mrs. O. G. Johnson, treasurer, 1517 Sixth street, S. E., Minneapolis, Minn.

Mrs. Rose Friend, historian, 2925 Farwell street, Milwaukee, Wis.

Mrs. Philip J. Brown, chaplain, 149 Lincoln street, Middletown, Conn.

Mrs. Foster R. Fanning, auditor, 124 Welborne avenue, Winter Park, Fla.

Mrs. Elmon Ewing, assistant auditor, 2129 Eye street, N. W., Washington, D. C.

Mrs. George Doench, parliamentarian, 2861 Ashmont avenue, Cincinnati, Ohio.

Directors

The directors are:

Mrs. W. E. McAndrew, past presiding chairman, 301 West Frances avenue, Tampa, Fla.

Mrs. H. O. Green, 1115 S. Cincinnati street, Tulsa, Okla.

Mrs. Charles Zimmerman, 915 Hudson avenue, Union City, N. J.

Mrs. Christian Madsen, 7 Grace street, Woodfords, Me.

Mrs. Wm. Metcalf, 208 Hamilton street, Rockville Centre, N. Y.

Mrs. Maney J. Feeney, 6125 Jefferson street, Philadelphia, Pa.

Mrs. E. B. Clayton, 1575 Madison street, Denver, Colo.

Mrs. L. A. Beard, 576 Marion avenue, Portland, Oregon.

Mrs. C. M. Schlenker, 201 South Grinnell street, Jackson, Mich.

Mrs. A. R. McGonegal, 200 Clarendon avenue, Clarendon, Va.

Mrs. L. J. Evans, 55 N. Claybrook street, Memphis, Tenn.

Mrs. R. G. Schwarz, 1302 Soniat street, New Orleans, La.

Mrs. J. Guy Hawkins, 1105 Field street, Clairmont, W. Va.

Mrs. George L. Smith, 511½ W. Sixth street, Amarillo, Texas.

Mrs. Edward S. McLean, 409 E. Fourth street, Wilmington, Dela.

State Presidents

The presidents of the state auxiliaries are:

Mrs. H. L. Rose, Jr., 6 Perry street, Cambridge, Mass.

Mrs. Earl L. Clevenger, 1025 East Washington street, Muncie, Ind.

Mrs. R. C. DeLautre, 308 N. W. Second street, Oklahoma City, Okla.

Mrs. Oliver Hoffman, 740 N. Howard street, Akron, Ohio.

Mrs. C. C. Rosenfield, 936 Twenty-second street, Rock Island, Ill.

Mrs. Henry Bunker, Jr., 182 Palisade avenue, Union City, N. J.

Mrs. N. M. Knudsen, Falmouth Foreside, Me.

Mrs. Frank Williams, 4109 Ninth street, Tampa, Fla.

Mrs. Robert Rennie, 415 East Thirty-fourth street, Portland, Oregon.

Mrs. I. E. Henderson, 1815 E. Thirty-first street, Kansas City, Mo.

Mrs. Howard F. Bryant, 692 Warren street, Bridgeport, Conn.

Mrs. Margaret Mesnard, 11901 Grand River avenue, Detroit, Mich.

Mrs. J. M. Simmons, 1041 Woodson street, Wichita, Kan.

Mrs. J. O. Stapf, 25 Third avenue, Albany, N. Y.

Mrs. O. A. Waskow, 3120 State street, Milwaukee, Wis.

Mrs. Elmon Ewing, 2129 Eye street, N. W., Washington, D. C.

Mrs. J. Guy Hawkins, 1105 Field street, Clairmont, W. Va.

Philadelphia Auxiliary Holds August Meeting in Atlantic City

The Ladies' Auxiliary of Philadelphia Master Plumbers Association held its August meeting at the home of Mrs. Duncan Worrell in Atlantic City, N. J. All met at the train with basket lunches and upon arriving in Atlantic City were met by Mrs. Worrell, who had arranged an interesting program consisting of bathing, boating and sight-seeing. The officers of the association acted as the committee. They are: Mrs. Geo. J. Diggins, president; Mrs. M. Stratton, vice president; Mrs. John F. Sibel, treasurer; Miss Violet Jacoby, secretary.

Left to right: Mrs. Geo. E. Jemison, Mrs. Frank Bangert, Mrs. Charles S. Loveman and Mrs. F. Casner, all of Asbury Park, N. J., at the annual convention of the New Jersey State Auxiliary, held recently at Lake Hopatcong, N. J.

Oakland Auxiliary Resumes Regular Meetings

Following the customary summer recess, the Women's Auxiliary of the Alameda County M. P. A. held its first meeting of the present season on August 15 at Master Plumbers' Hall, 538 Twenty-fourth street, Oakland. As president, Mrs. W. D. J. Evans occupied the chair. An outline of activities for the coming months includes many attractive social affairs, concluding the year with the usual Christmas party. The auxiliary, both as a body and as individuals, has been quietly carrying on relief work among the needy.

The August Meeting of Indianapolis Auxiliary

The Indianapolis auxiliary held its August meeting at the summer home of Mrs. F. E. Trosky at River Park. Cards and bunco were played following a short business meeting. Ice cream and cake were served later in the afternoon. The next meeting will be held at the home of Mrs. Chas. Trosky, 1413 West Thirty-third street, Indianapolis.

Denver Auxiliary Holds House Party at Grand Lake

The Ladies' Auxiliary to the Denver Master Plumbers' Association held its annual house party and outing, open to husbands and other members of the families, at the summer home of Mr. and Mrs. Vincent Kandorf at Grand Lake, Colorado. This week end party extended over a period of three days. Each family furnished its own conveyance for the trip except where families went together to save expense and increase sociability. In the evenings, cards were the pastime with Mrs. Joel P. Brickey and Edwin B. Clayton the winners. The greatest fun on this outing was at the expense of Robert Demmer, vice president of the Denver Master Plumbers' Association, who fished with two poles. Mr. Demmer after catching a few trout minnows finally hooked a large sucker which frightened him so badly that he was only saved from being dragged out of the boat into the lake by his son Kenneth. With Kenneth's help they managed to land this sucker, the biggest fish caught by any of the party.

Those attending the party were as follows: Mr. and Mrs. Vincent Kandorf and daughter, Mr. and Mrs. Guy Stocking and daughter Francis and twin sons Gale and Glenn, Mr. and Mrs. Frank X. Kreidl, Mr. and Mrs. Robert Demmer and son Kenneth and daughter Elsie, Mr. and Mrs. C. R. Cooper, Mr. and Mrs. Carl Thurston, Mr. and Mrs. Edwin B. Clayton, Mr. Seeley, Mr. and Mrs. George Demmer.

Minneapolis Auxiliary and Master Plumbers Enjoy Boat Trip

Members and families of the Master Plumbers' Association and of the Auxiliary of Minneapolis, Minn., recently made a trip by boat from St. Paul to Hastings, Minn., and return. Everyone enjoyed dancing, card playing or other amusements on deck. There was a very good attendance since each association member was visited by members of the auxiliary, a few days before, asking them to close their store and with their families join in the all-day affair. Members of the auxiliary said that it was not only a grand success as far as friendship and good times were concerned, but that nearly $100 was added to the treasury.

The by-laws of the auxiliary have been revised, including one change which states that only the wives of association members may belong to the auxiliary. Mrs. Wintheiser, welfare committee chairman, announced that gro-

DART UNIONS

are saving money for those who use them, because they are eliminating unnecessary breakdown expense. They give twice ordinary service because of the two bronze to bronze seats which prevent rust and corrosion and assure long service.

E. M. DART MFG. CO.
Providence, R. I., U. S. A.
Sales Agents:
The Fairbanks Co., New York and all branches
Canada Factory:
Dart Union Co., Ltd., Toronto, Canada

Dart Unions

TWO BRONZE to BRONZE SEATS

Make PROFITS on Remodeling

THE KAINER PRESSURE GOVERNOR

Accurate
Simple
Safe
Automatic Control for Hot Water Heating Systems

Write today for prices and Bulletin 32-B

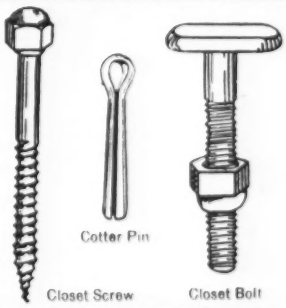
A. S. M. E. Approved

KAINER & COMPANY
CHICAGO
761-771 MATHER STREET

HINDLEY'S is a most complete line of Plumbers' Specialties.

See this line, fully described on Page 551 of Domestic Engineering Plumbing & Heating Catalog. Then take quick action.

HINDLEY MFG. CO.
VALLEY FALLS . . R. I.



HINDLEY PLUMBERS' SPECIALTIES

Fig. 1941 Taber Midget Sump Pump

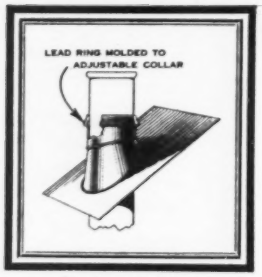
It works . . . . . when needed most

After heavy rain-storms there is an increased demand for Taber automatic Midget Sump Pumps. Frequently they replace "low price" cellar drainers inadequately motored.

Why wait for a peak load to tell whether the pump will work? Avoid troublesome, profitless service calls . . . install Taber first. The owner of any sump pump expects "Dry Cellar Insurance." He gets it with a Taber Midget.

Bulletin and prices on request. Also see Page 923 Domestic Engineering Catalog.

TABER
TABER PUMP CO Est. 1859
290 Elm Street, Buffalo, New York



HESSLER
Adjustable
ROOF FLANGE

NO. 1 ¼ TO ½ PITCH
NO. 2 FLAT TO ¼ PITCH

1½ in. to 6 in.

H. E. HESSLER CO., SYRACUSE, N. Y., U. S. A.

• WARNOCK •
Triple Wear Wrenches

The Warnock wrench is easyto adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

For chrome, brass and nickle plated pipe

WARNOCK MFG. CO., Worcester, Mass.

A Complete Home Water System

$59.50 LIST PRICE
F. O. B. Factory

A complete, electric, fully automatic HOME WATER SYSTEM at the lowest price in history for a genuine Fairbanks-Morse Product. Other sizes and types for any water supply, engine or electric driven at correspondingly low prices.

FREE BOOK All about Home Water Systems—how to choose the type to best meet your needs. Full information on how RUNNING WATER can be installed in your home at lowest cost. Sent free. Write

FAIRBANKS-MORSE & CO., Dept. I9
900 S. Wabash Ave., Chicago

FAIRBANKS-MORSE
HOME LIGHT AND WATER SYSTEMS

New Monel Metal "Straitline"
CABINET SINKS

NOW AVAILABLE

Ask your jobber for details or write direct

Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

ceries, underwear, shoes and stockings had been bought for six families. A six months' electric bill was also paid for another family. There are only one or two families connected with the association that are in need, and the auxiliary tries to take care of them first. The next meeting will be held in September.

St. Louis Auxiliary Hears Reports from National Convention

The St. Louis, Mo., Women's Auxiliary held its regular monthly meeting recently at the Hotel Statler. Mrs. J. D. Els, president, and Mrs. H. Mersmann, secretary, who attended the national convention in New York City, both told of the successful women's meeting there. However, a detailed discussion of the national meeting will take place on October 13, when the auxiliary next meets. A card party recently held proved a success. Prizes were won by Mrs. D. Hannegan and Mrs. Hy. Ryffel. The president asks that everyone attend the October 13 meeting, which will also be held at the Statler Hotel.

Denver Auxiliary Holds Basket Picnic

Some of the members of the Ladies' Auxiliary to the Denver Master Plumbers' Association recently held a basket picnic at Washington Park in Denver. With plenty of ice cream, coffee, pie, cake, cantaloupe, fruits, meats, bread, pickles, jams, jellies, etc. those assembled had a very delightful dinner. Outdoor cards were the only recreation. Among those present were: Mr. and Mrs. G. A. Stocking and their twin sons, Mr. and Mrs. J. P. Brickey, Mr. and Mrs. Robt. Demmer, daughter Elsie and son Kenneth, Mr. and Mrs. George Demmer, Mr. and Mrs. Edwin B. Clayton, all of Denver; Mr. and Mrs. Charles Turner and Mrs. Compton of Boulder, Colorado.

Death of Mrs. J. S. Levene

Mrs. May Levene, wife of J. S. Levene, Kansas City, Mo., master plumber, who was formerly secretary of the Missouri Association of Master Plumbers, died recently at her home of heart disease. She was 48 years of age. Mrs. Levene is survived by her husband, a daughter and a son.

BATH A DAY

THE school season is now opening up, and the opportunities to distribute copies of "The Story of the Bath" to school children are once more presented.

For many years this booklet and in fact the entire "Bath-A-Day" campaign has been fighting vigorously for public attention and getting it. If you haven't seen a copy of this interesting booklet, write to the Editor of "Domestic Engineering," and you will receive one by return mail.

Philadelphia, Pa.—Walter W. Muench, 2134 Cherry street, has been awarded the contract for the installation of plumbing, heating and ventilating systems in the Franklin Institute in this city.

Philadelphia, Pa.—R. Kaufman, Inc., 1615 Unity street, has been awarded the contracts for the installation of a heating system in the addition to the South Philadelphia high school and for the installation of plumbing and heating systems in the United States postoffice at Norristown, Pa.

PIPE LINES CONNECTED BY L·Y·T

CALL THE STEAMFITTER

A tourist was enjoying the wonders of California as pointed out by a native.

"What a beautiful grapefruit!" he said, as they passed through a grove of citrus trees.

"Oh, those lemons are a bit small, owing to a comparatively bad season," explained the Californian.

"And what are those enormous blossoms?" asked the tourist.

"Just a patch of dandelions," said the Californian.

Presently they reached the Sacramento River.

"Ah," said the tourist, grasping the idea, "somebody's radiator is leaking!"—Exchange.

Teacher, to banker's boy (the brightest in the class): "How many bones have you in your body?"

Willie: "Nine hundred."

Teacher: "That's a good many more than I have."

Willie: "Yeah, but I had sardines for lunch."

Man (having given up his seat in the street car): "I beg your pardon!"

The Girl: "I didn't speak!"

The Man: "Sorry, I'm sure. I thought you said 'thank you.'"

"Yes," said the boastful young man, "my family can trace its ancestry back to William the Conqueror."

"I suppose," sneered his friend, "You'll be telling us that your ancestors were in the Ark with Noah!"

"Certainly not," said the boaster. "My people had a boat of their own." —Leighton's Gloom Chaser.

FINANCIALLY EMBARRASSED

Judge: "Have you anything to offer to the court before sentence is passed on you?"

Prisoner: "No, judge. I had ten dollars but my lawyer took that."

A speaker had just reached his greatest climax, saying: "In the immortal words of Daniel Webster, who wrote the dictionary, 'Give me liberty, or give me death!'"

The chairman pulled his coat-tails and whispered: "Daniel Webster did not write the dictionary—that was Noah."

"Noah? Nothing of the kind—Noah built the ark." Haysco Spigot.

"Well," said the dying business man," you'd better put in a clause about my employees. To each man who has worked for me twenty years I give and bequeath $50,000."

"But," said the lawyer, "you haven't been in business twenty years."

"I know it, man; but it's good advertising."

—Catalina Islander.

Busy Blustering Business Man to stenog. as telephone rings: Take the message and I'll get it from you later.

Steno (demurely): Your little girl sent you a kiss over the wire.

THE GOLFER'S HANDICAP

The Golfer—"They're all afraid to play me. What do you think my handicap is?"

The Girl—"Oh, I don't know. It may be your face."

HE KNEW FRACTIONS

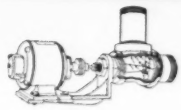
Mamma: "How many sisters did your new playmate tell you he had?"

Willis: "He's got one. He told me he had two half-sisters, but he'll find out that I know fractions."

ADD "JOBS WE DON'T ENVY"

The candidate up for re-election, who must convince the jobless man that the holes in his shoes are merely psychological. —The Insert.

A man, who is on the square, can always have a large circle of friends. L Y T.



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Special Bearings—Oil-less Type. Special motors for each size. Special High Pressure Types. Special Charts and Performance Data for Calculating Jobs.

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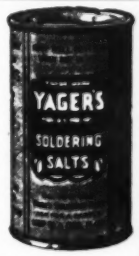
.....for all lead work



Carry YAGER'S Soldering Salts with you on every job. You'll do the work in half ordinary time. You'll do the work easier and better and most important to you, of course, is the incidental saving. For further information see description in Domestic Engineering Plumbing and Heating Catalog.

ALEX R. BENSON CO., Inc., Hudson, N.Y.
Sales Agency for Canada
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YAGER'S SOLDERING SALTS

4'x5' Oval Float

NO-SOL COPPER FLOATS

No-Sol Floats incorporate all features necessary to the satisfactory performance of a tank float.

5' Round Float

Each float is individually tested and guaranteed.

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Sell Customer Satisfaction ...and profit is assured

You can safely recommend an OHIO... There's a model to fit every job.
Write for dealer proposition.

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WATER HEATER

Manufactured by **THE OHIO HEATER CO.,** ***Columbus, Ohio***

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Radiator Trap

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No. 5 Vent

No. 14 Heavy Duty Trap

No. 150 Radiator Valve

Air and Vacuum Valve

Hot Water Thermometer

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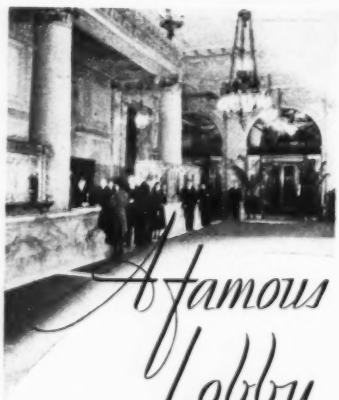
Home Office: 2079 Southport Ave., Chicago. Ill.
Sales offices in principal cities
IN CANADA: Jas. Morrison Brass Mfg. Co., Ltd., Toronto



A famous Lobby

ITS register reads like a "Who's Who" of world leaders in commerce, finance, diplomacy, the arts, and social life. The last eight Presidents of the United States have always stopped at the Bellevue-Stratford.

YOU will enjoy its fine hospitality and faultless efficiency—at rates that are quite consistent with present times.

BELLEVUE STRATFORD
PHILADELPHIA
CLAUDE H. BENNETT, *Gen. Mgr.*

SENTENCES THAT SELL

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

Fools wait for things to turn up; wise men go and turn them up.

* * *

It is folly to tell a man with the toothache that misery loves company.

* * *

True friendship, like phosphorus, shows up best in the darkest hour.

* * *

Only a high-toned girl can sing every note in the scale.

* * *

At forty a man wishes he knew what he thought he knew at twenty.

* * *

The weather is never cold enough to nip the society bud.

* * *

A tombstone always has a good word for a man when he is down.

* * *

No man can make a mountain, but some men can make a big bluff.

* * *

Some men seem to think that a woman's mission is submission.

* * *

Every time a man fails to hit the target he blames the gun.

* * *

It's always the fellow with the sand who wins the girl with the rocks.

* * *

Lots of family trees bear poor fruit.

* * *

Don't fail to put your hand in your pocket when you feel for the poor.

* * *

A man could afford to buy diamonds for his wife if he wasn't married.

* * *

Many a well-informed woman has to thank her servant girl for it.

* * *

The hour of triumph will come to the man who hustles.

* * *

It is hard for a truthful man to become a success as a fisherman.

* * *

Lots of friends are retained by not saying the smart things we might have said.

* * *

To succeed in life one must know what he can do.

* * *

Lawyers feel kindly toward the men who make their own wills.

* * *

It is a sober truth that intemperance is a vice.

* * *

There is some difference between making your mark and making remarks.

* * *

Men who know it all are seldom able to furnish the proof.

* * *

The best jokes about a man are those he never hears.

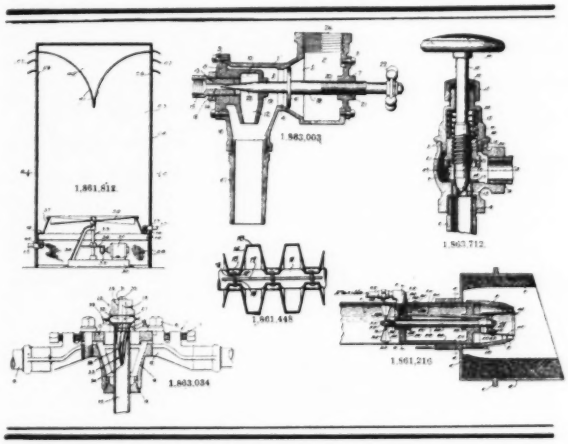
NEW IDEAS FROM PATENT OFFICE

Heating Department

1,861,812. Heating Device. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,863,003. Gas Burner. Albert R. Bethel, Huntington Park, Calif.

1,863,712. Heating System. Albert H. Byfield, Chicago, Ill.



1,863,034. Reamer and Reamer Chuck for Pipe Threading Devices. Joseph Henry Strock, Los Angeles, Calif.

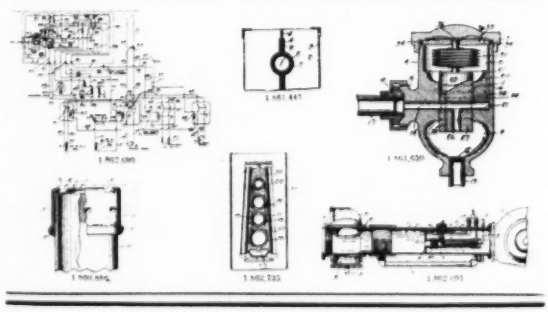
1,861,448. Radiator. Thomas E. Murray, deceased. Brooklyn, N. Y., by John F. Murray, Joseph B. Murray, and Thomas E. Murray, Jr., executors, Brooklyn, N. Y., assignors, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

1,861,216. Oil Burner. Sinius M. Hansen, Lynn, Mass., assignor, by mesne assignments, to A T Oil Burner Co., Lynn, Mass., a Corporation of Massachusetts.

1,862,690. Oil Burning Apparatus. James N. Macrae and Ralph S. Thoresen, Stamford, Conn., assignors to Petroleum Heat and Power Company, New York, N. Y., a Corporation of Delaware.

1,861,447. Radiator. Thomas E. Murray, Jr., Brooklyn, N. Y., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

1,861,650. Steam Radiator Trap. Charles R. Watts, Berkeley, Calif., assignor of one-third to Edward L. Watts and one-third to Charles R. Watts, Jr., Berkeley, Calif.



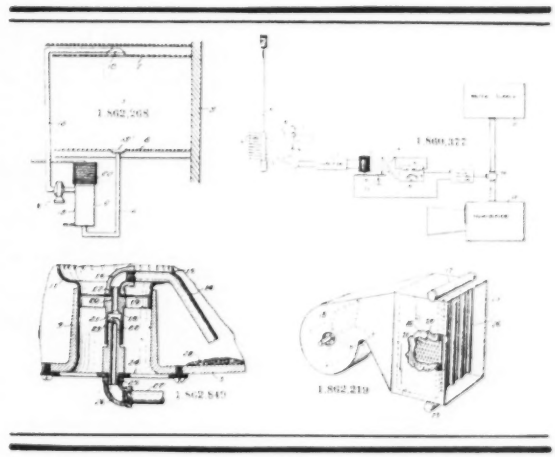
1,860,886. Pipe Thread Protector. Benjamin Brownstein, Ellwood City, Pa.

1,862,735. Radiator. Earl H. Beling, Moline, Ill., assignor to The Herman Nelson Corporation, Moline, Ill., a Corporation of Illinois.

1,862,691. Oil Burner. Walter L. Majors, St. Louis, Mo.

1,862,268. Air Cooling System. Earl Hoskins, Phoenix, Ariz., assignor of one-third to J. D. Fitzpatrick, Phoenix, Ariz.

1,860,377. Air Conditioning Control. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Company, Boston, Mass.



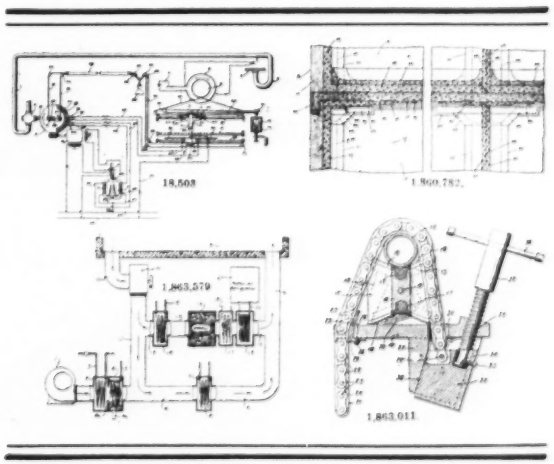
1,862,849. Gas Pilot for Oil Burners. Augustus J. Frame, Columbus, Ohio.

1,862,219. Radiator. James M. Harrison, Cleveland, Ohio.

18,503. Regulating System. Lewis L. Cunningham, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,860,782. Insulated Building. Charles A. Moore, Edina, Minn.

1,863,011. Pipe Vise. Henry J. Hach, Louisville, Ky.



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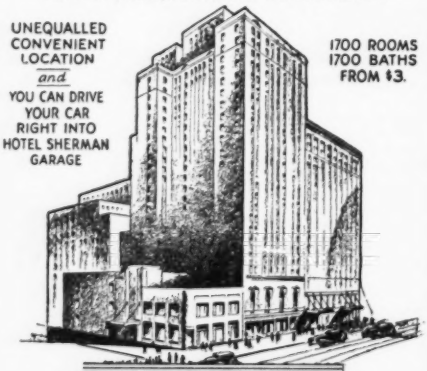

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SINGLE..$2.50 AND UP

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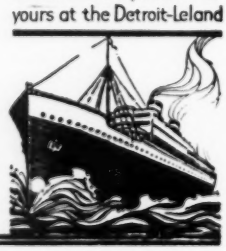
The hospitality that has made the Baker name famous everywhere is yours at the Detroit-Leland



CASS AND BAGLEY

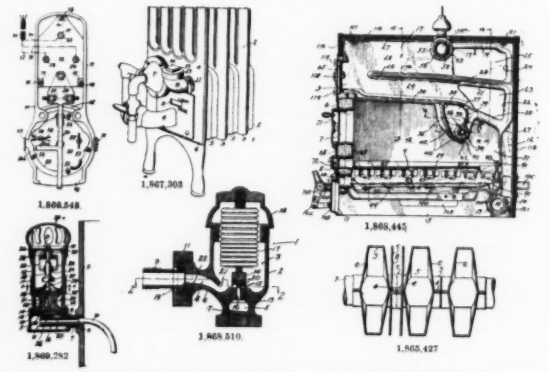
DETROIT

1,863,579. Method and Apparatus of Air Conditioning. Clark T. Morse and Edward L. Hogan, Detroit, Mich., assignors to American Blower Corporation, Detroit, Mich., a Corporation of Delaware.

1,866,548. Thermostat. Allen A. Dicke, Montclair, N. J., assignor to Pioneer Heat Regulator Company, a corporation of New Jersey.

1,867,303. Radiator Attachment. George W. Blackmore, Pittsburgh, Pa., assignor to Automatic Gas Steam Radiator Company, Pittsburgh, Pa., a corporation of Pennsylvania.

1,868,445. Boiler. Charles W. Brabbee, Bronxville, N. Y., assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey.



1,869,282. Radiator Valve. Louis Schwartz, Brooklyn, N. Y., assignor to Minnie Schwartz, Brooklyn, N. Y.

1,868,510. Steam Radiator Trap. Charles R. Watts, Berkeley, Calif., assignor of one-third to Edward J. Watts and one-third to Charles R. Watts, Jr., Berkeley, Calif.

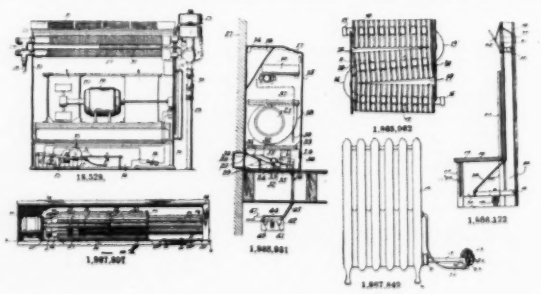
1,865,427. Radiator. Irving T. Bennett, Brooklyn, and Frank C. Reynolds, New York, N. Y., assignors, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a corporation of Delaware.

18,528. Heating and Ventilating Unit. Morton O. Snediker, Chicago, Ill., assignor to The Powers Regulator Company, Chicago, Ill., a corporation of Illinois.

1,867,807. Heating Apparatus. Harry E. Campbell, Baltimore, Md., assignor to Campbell Metal Window Corporation, Baltimore, Md., a corporation of Maryland.

1,865,981. Air Conditioning Unit. Reuben N. Trane, La Crosse, Wis.

1,867,849. Regulator for Gas-Heated Steam Radiators. Otto John Kuenhold, Cleveland, Ohio, assignor to H. M. Sheer Company, Quincy, Ill., a corporation of Illinois.



1,865,962. Radiator. Frank C. Reynolds, New York, N. Y., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a corporation of Delaware.

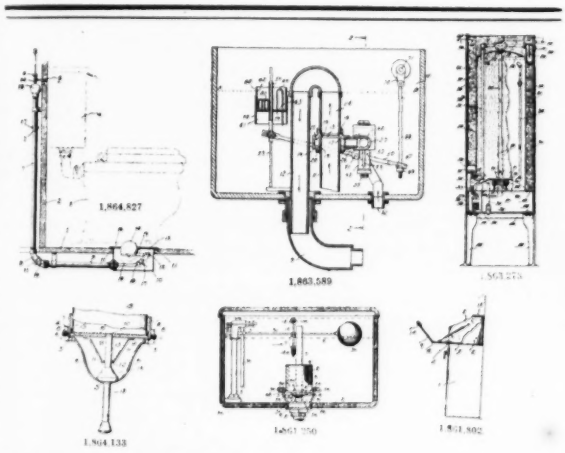
1,866,122. Heating Device. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a corporation of Wisconsin.

Plumbing Department

1,864,827. Sanitary Toilet Flush. Clifford W. Jenkins and Edwin B. Bishop, Sacramento, Calif.

1,863,589. Flush Tank Fixture. Alfred A. Briggs, New York, N. Y., assignor of one-half to Josiah A. Briggs, New York, N. Y.

1,863,273. Water Heater. Orrin Hofferbert, Beaver Dam, Wis., assignor to Malleable Iron Range Company, a Corporation of Wisconsin.



1,864,133. Soap Powder Dispenser. Thorvald F. Hammer, Branford, Conn.

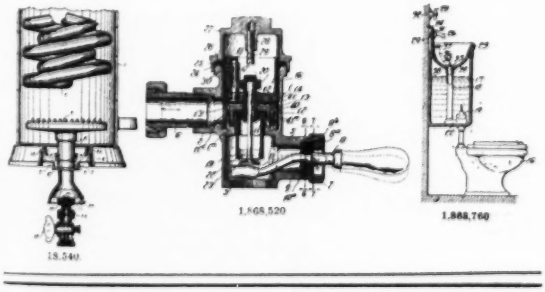
1,861,250. Flush Valve. Bert O. Tilden, Trenton, N. J., assignor to B. O. T. Manufacturing Company, Trenton, N. J., a Corporation of New Jersey.

1,861,802. Combination Toilet Tank Cover and Cabinet. John Henry Kelly, Longview, Wash.

18,540. Valve. Loran F. Doen, Cleveland, Ohio, assignor to The Cleveland Heater Company, Cleveland, Ohio, a corporation of Ohio.

1,868,520. Flushing Valve. Robert A. Brooks, Chicago, Ill.

1,868,760. Lavatory. Ernest L. Norberg, San Francisco, Calif.



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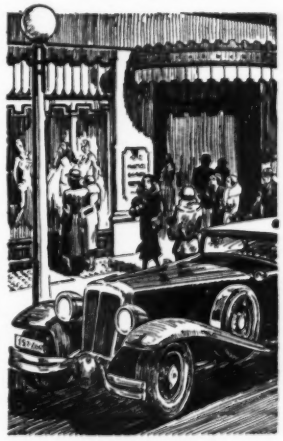

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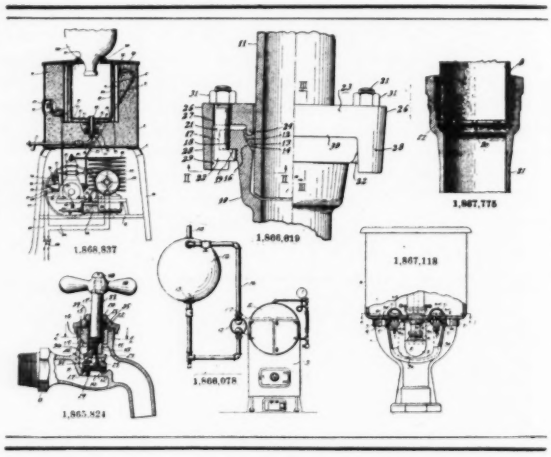
The HOME *of* KENTUCKY HOSPITALITY

1,868,837. Drinking Water Cooling and Dispensing Apparatus. Benjamin Markus, Oak Park, Ill., assignor to Henry P. Watson, Minneapolis, Minn.

1,866,619. Pipe Joint. Harry Y. Carson, Birmingham, Ala.

1,867,775. Expansion Means for Bell and Spigot Pipes. Alfred E. Stringer, Chicago, Ill.



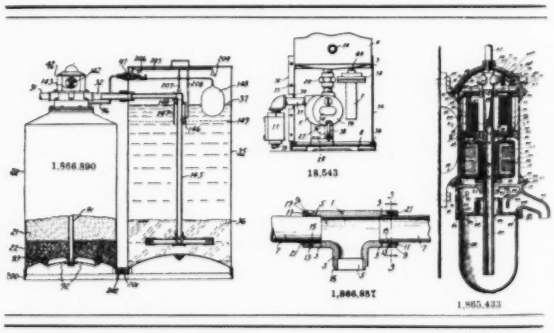
1,865,824. Valve. Winslow P. Bradford, Buffalo, N. Y.

1,866,078. Water Heater. Robert L. Blanding, Providence, R. I.

1,867,118. Connection for Water Closet Combinations. Bert O. Tilden, Trenton, N. J., assignor to B. O. T. Manufacturing Company, Trenton, N. J., a corporation of New Jersey.

1,866,890. Water-Softening Apparatus. Anthony G. Horvath, Dayton, Ohio, assignor, by mesne assignments, to The Permutit Company, New York, N. Y., a corporation of Delaware.

18,543. Water System Pump Unit. Stanley H. Hobson, Rockford, Ill., assignor to Geo. D. Roper Corporation, Rockford, Ill., a corporation of Illinois.



1,866,857. Joint. David E. Lindquist, Port Huron, Mich., assignor to Mueller Brass Co., Port Huron, Mich., a corporation of Michigan.

1,865,433. Apparatus for Purifying Water with Ozone. James Marlowe Daily, Chicago, Ill., assignor to American Ozone Company, Chicago, Ill., a corporation of Illinois.

Syracuse, N. Y.—W. S. Orr Plumbing Co., Inc., has moved its business from 227 East Genesee street to 130 Cortland street. M. A. Barney is manager of this company.

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8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

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WANTED BY A MILL, EXPERIENCED pipe salesman for Detroit territory. Address Key 781, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALESMAN WANTED TO CALL ON the wholesale plumbing and heating jobbers in the states of Oregon and Washington with our line of tubular brass goods and heating specialties. Applicant must state age and accounts now being represented. Address The Keeney Manufacturing Co., Newington, Connecticut.

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WANTED BY A MILL, EXPERIENCED pipe salesman for Boston territory. Address Key 782, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

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FOR SALE: ONE RAY NO. O FULL Automatic Oil Burner, new; one Ray No. 3 Full Automatic Oil Burner, used; one Combustioneer new household stoker; one 30-inch Clarage direct-connected exhaust fan. Address 1024 Barr Street, Ft. Wayne, Indiana.

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SALES EXECUTIVE, 20 YEARS' EXperience, enjoying wide acquaintance plumbing supply houses Metropolitan New York, wishes to represent one or several manufacturers. Address Key 778, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

MANUFACTURERS' AGENT CALLING on large retail plumbing and heating accounts desires complete line of concrete inserts, radiator brackets, pipe hangers, etc. References and bond furnished. Address Key 779, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Representatives Wanted

REPRESENTATIVES WANTED TO contact heating dealers with thermostatically controlled coal burner (blower) retailing at $29.75. Unlimited market at this price. Address Universal Blower Company, Birmingham, Michigan.

WANTED — MANUFACTURERS' REPresentative to handle old established line of plumbers' tubular brass goods in Texas, Louisiana, Mississippi—to jobbing trade only. Full detail in first letter. Address Key 775, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALES REPRESENTATIVES BRANCH MANAGERS SALESMEN

who are thoroughly experienced in the sale of steam and hot water heating equipment, who have outstanding sales records and who are interested at this time in a lucrative sales opportunity such as does not usually exist, should write for further information. Give full particulars concerning experience, past connections and sales. Present members of organization are aware of this ad and all inquiries will be treated confidentially. Address P. O. Box 1222, Pittsburgh, Pa.

DISTRICT SALES REPRESENTATIVE. Several desirable territories now open to represent well-known line of Electric Pumps and Water Systems. Only high type salesmen need apply. References required. Write at once to Key 772, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Miscellaneous

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RED. ELLS

Send for samples and prices of card holders, bin labels and stop valve tags, and free booklets: "How to Lay Out the Plumbing Shop." Haddon Bin Label Co., Haddon Heights, N. J.

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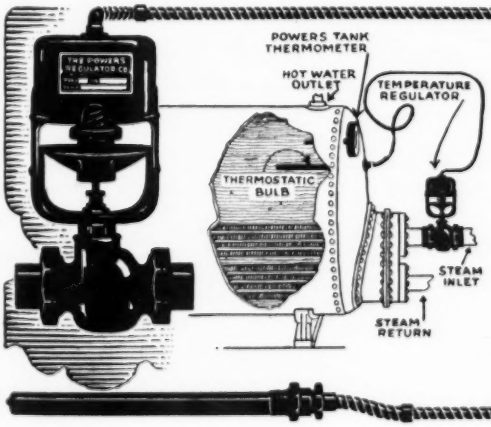

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Metered steam records of Aldis & Co., who own and operate many buildings in Chicago, showed a reduction of 154,000 pounds of steam a month with Powers Temperature Control on hot water heaters in their Champlain Building.

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with Interchangeable Handles for Installations of Every Type

China lever handle

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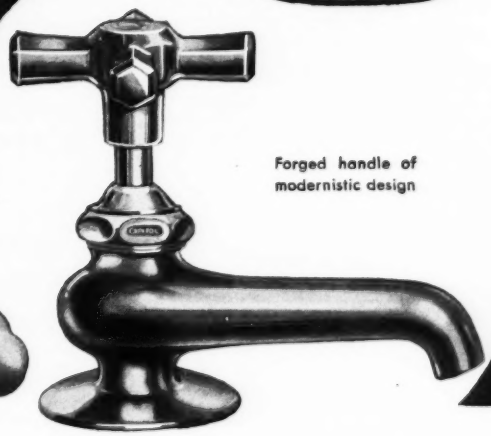

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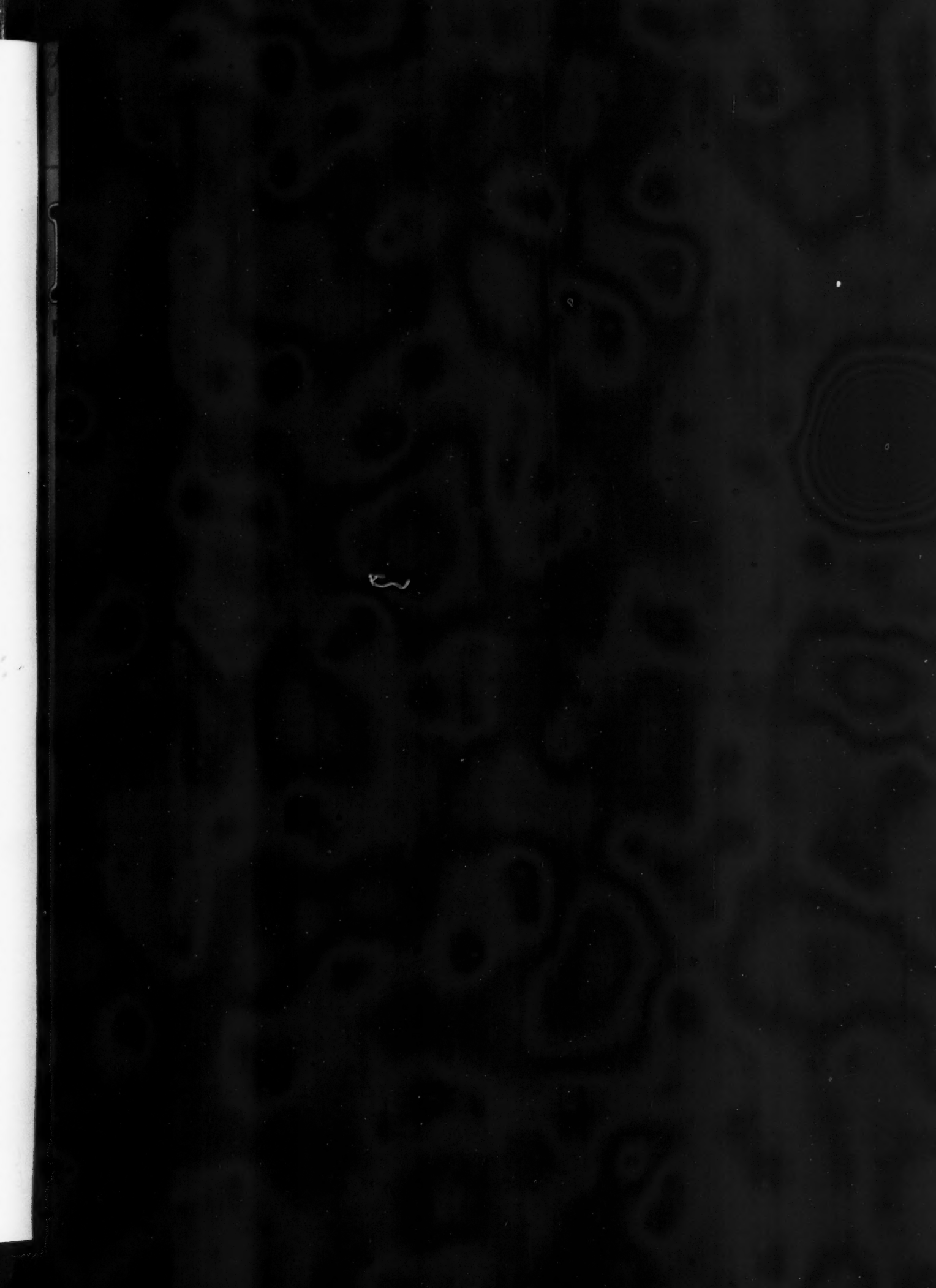
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